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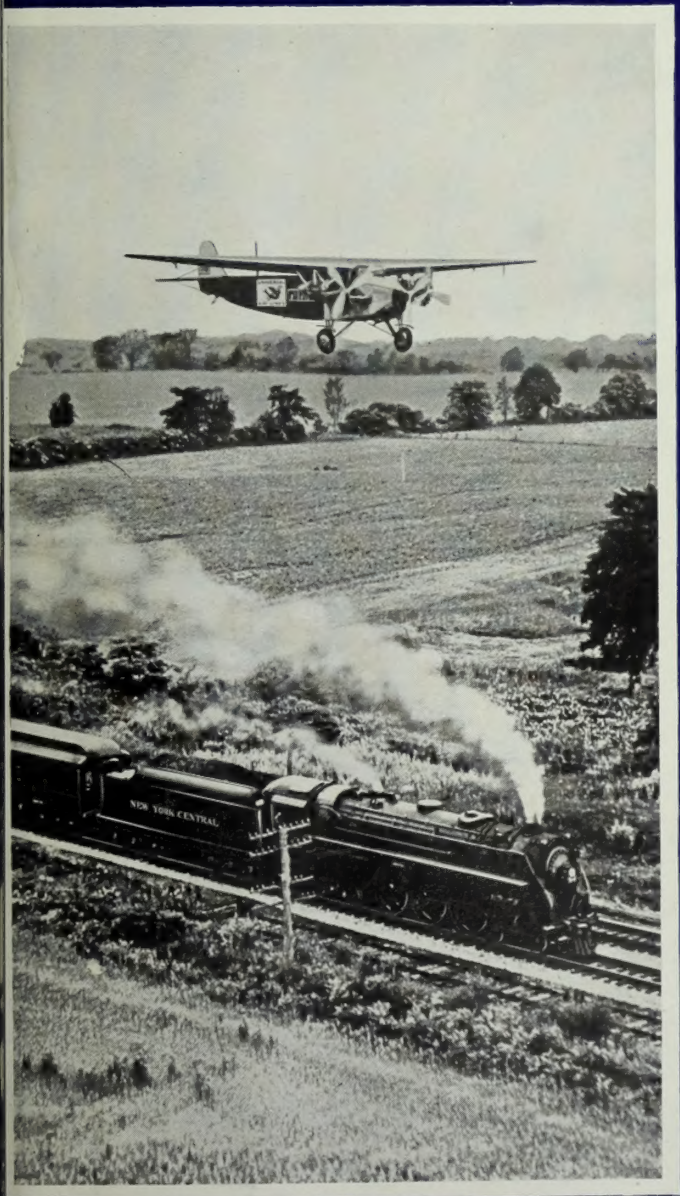
Transportation

The National Monthly of the Transportation Industry



PROGRESS of TRANSPORTATION in the LAST TEN YEARS

—

Increase in Efficiency Since the End of Federal Control

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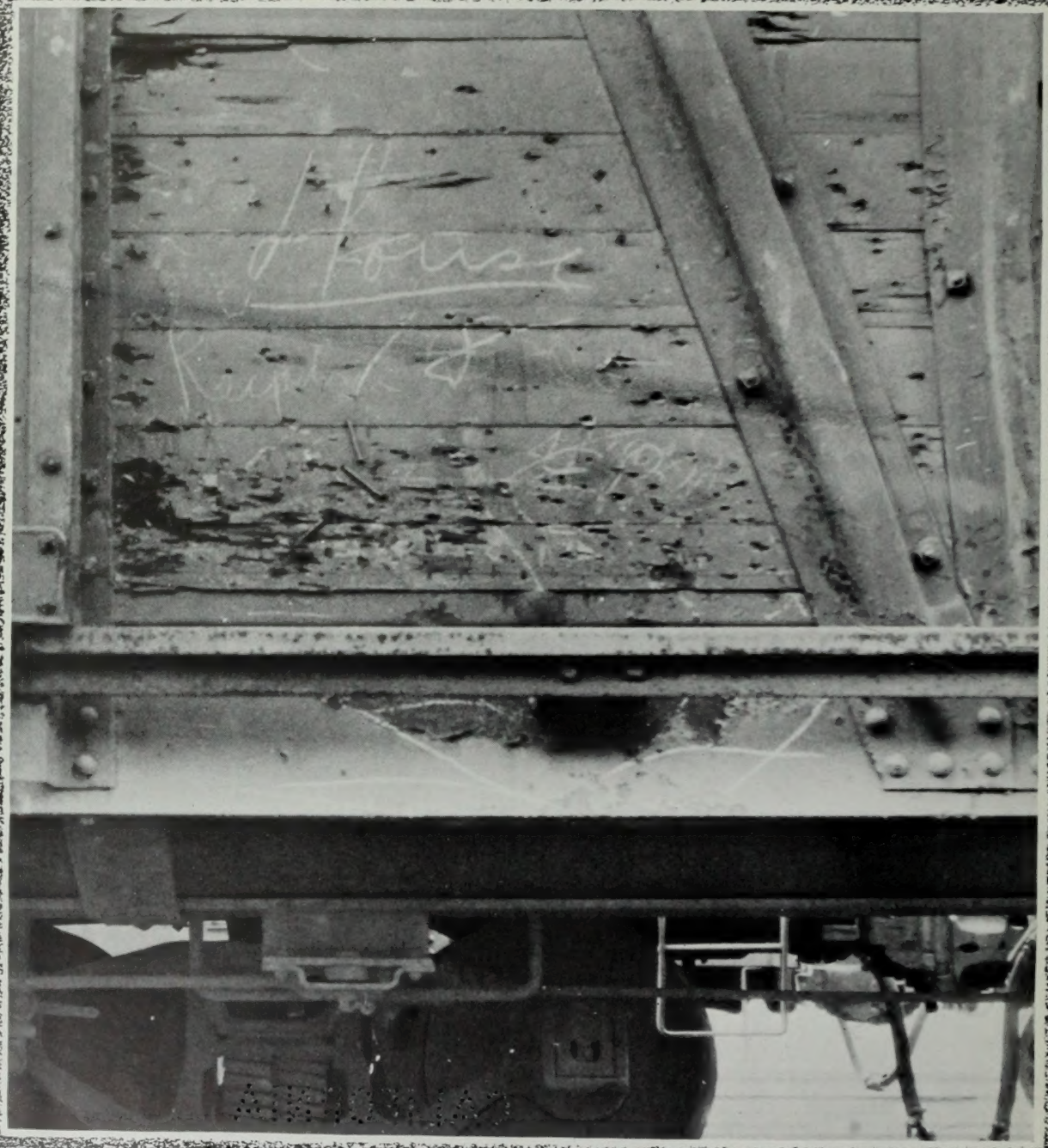

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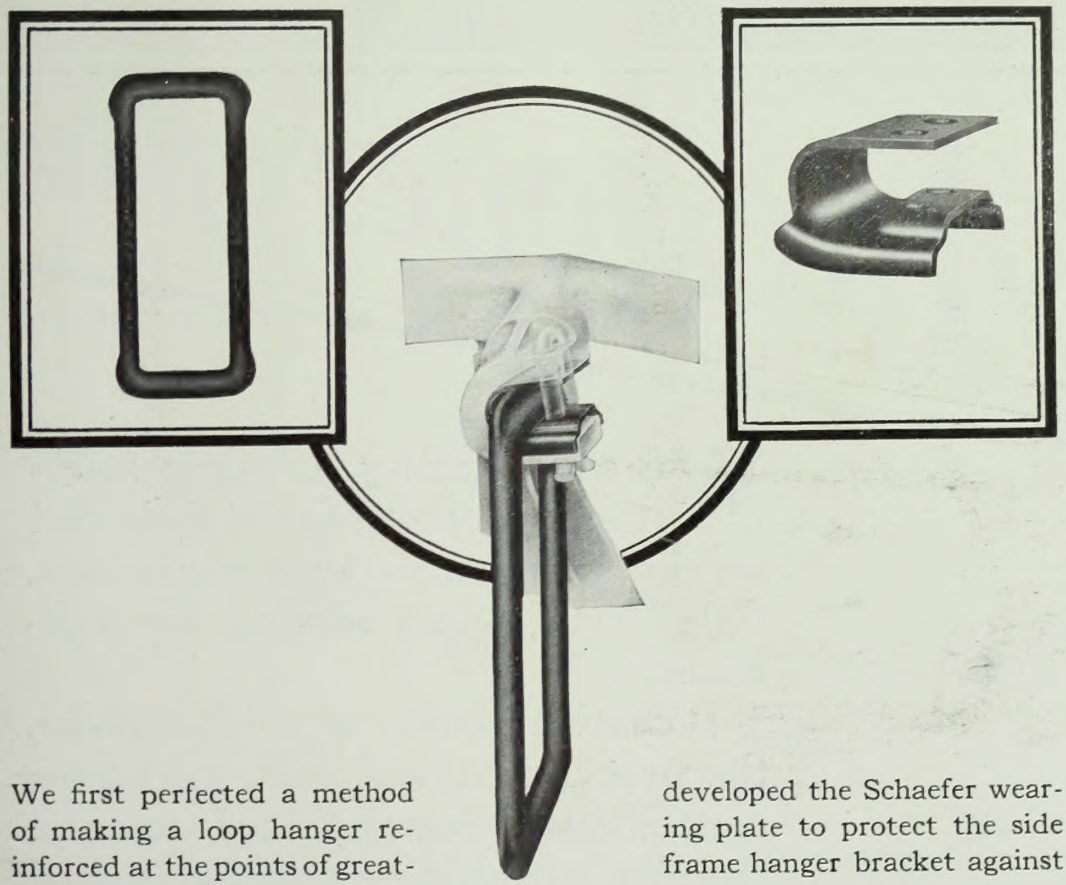

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PROGRESS EDITION

Transportation

(Reg. U. S. Patent Office)

The National Monthly of the Transportation Industry

Vol. VI **January, 1930** **No. 1**

Ten Years' Effort

IN ALL THE history of American railroads there is no more interesting chapter than that presented in this edition of Transportation. Here, in a series of exclusive articles, the executives of most of the principal lines, led by the former chairman of the Interstate Commerce Commission, Ernest I. Lewis, tell what has been done in the last ten years or, as custom has taken to calling it, since the end of federal control.

The way in which the railroad properties have been rehabilitated, improved, and brought, finally, to a state of efficiency never believed possible in the past, is described by the men responsible for its perfection; and this, it should be remembered, was done under what we call private ownership and management.

The articles are presented in the order arranged in the table of contents at the right. The achievements described seem a fine guarantee of the high quality service in the future to which the American public is now accustomed.

Special Articles By:

ERNEST I. LEWIS,	*Chairman, Interstate Commerce Commission*
R. H. AISHTON,	*President, American Railway Association*
CARL R. GRAY,	*President, Union Pacific System*
M. J. GORMLEY,	*Chairman, Car Service Div. A. R. A.*
E. W. BEATTY,	*Chm. & Prest. Can. Pac. Ry.*
EDWARD HUNGERFORD,	*New York Central Lines*
C. E. JOHNSTON,	*President, Kansas City Southern Ry.*
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DANIEL UPTHEGROVE,	*Prest. St. Louis-Southwestern Ry.*
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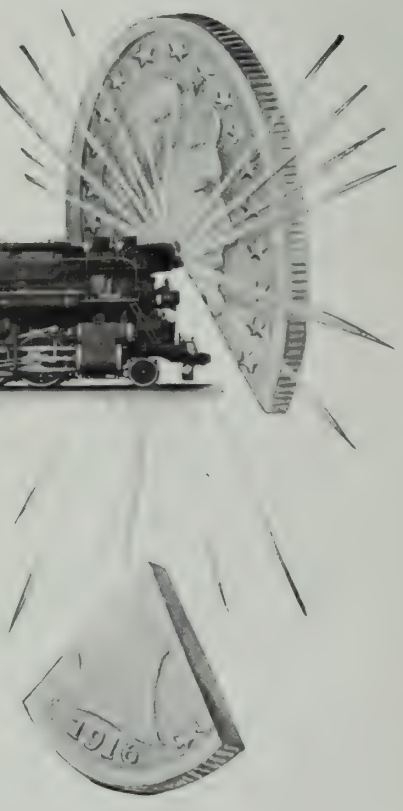
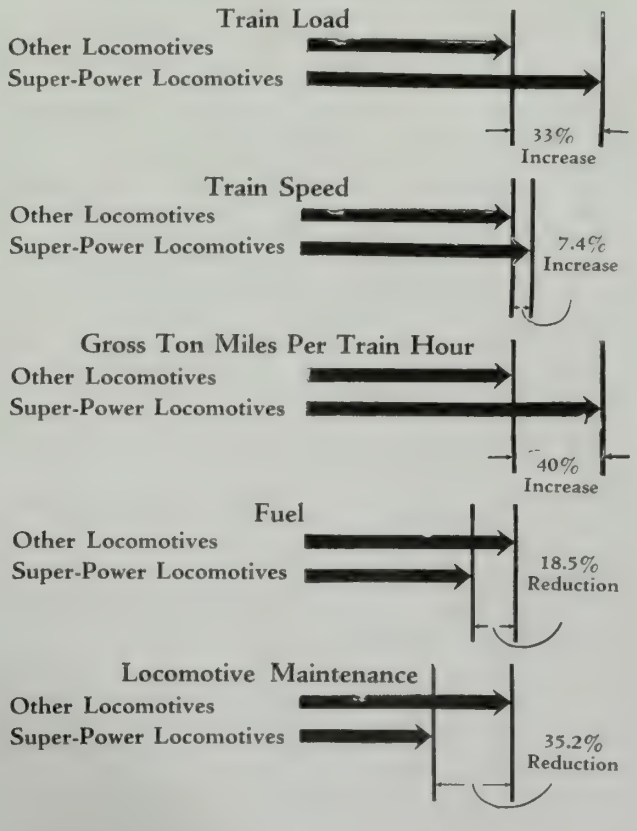


How It Was Done



LIMA LOCOMOTIVE WORKS INCORPORATED

How the Railway Plant Has Grown

The Interstate Commerce Commission Has Had Big Problems to Solve

By Ernest I. Lewis

Chairman, Interstate Commerce Commission

WHEN THE steam railways of the United States were turned back to their owners in 1920 many problems were pressing for solution. Could the capacity of the railways be made adequate for expanding business? Could the speed of transportation be increased? Could labor be pacified and strikes avoided? And could the cost of transportation be lowered and reasonable rates and net earnings be restored?

Much progress has been made in less than a decade in giving a satisfactory demonstration in answer to these questions. In the twelve months ending with August, 1929, the steam railways handled with ease a volume of freight business about 10 per cent greater than the then record-breaking traffic of 1920. To accomplish this result the capacity of the steam railway plant has been expanded, not by increasing the aggregate length of railway lines, which was actually less at the close of 1928 than in 1920, but by adding to the second-main tracks and yard tracks and in modernizing the equipment.

From 1920 to 1928, the miles of main track other than first increased 15 per cent, and the miles of yard tracks and sidings nearly 14 per cent. The number of steam locomotives was 5,631 less in 1928 than in 1920, but the average tractive power increased in that period from 36,365 pounds to 43,838, an increase of over 20 per cent. This means that many small obsolete locomotives have been replaced by modern and more powerful ones. When the cars of private refrigerator and tank car lines are included the number of freight cars has been increased somewhat, and there has been an increase of 3.4 tons in the average capacity of a freight car, and, in addition, the increased rapidity of car movement has expanded the usefulness of the cars. For 1920 the average number of car-miles per car day was 25.1 and for 1928 this average was 31.3.

It is true that the percentage of empty mileage was greater in 1928 than in 1920, but even if this is taken into account, the rapidity of car circulation was greater in 1928. The possibility of reducing unnecessary empty freight car hauls is one of the opportunities for economy perhaps not yet fully exploited by the railway managers. In 1920 the average speed of freight trains, including stops, was 10.3 compared with 12.9 in 1928, an increase of about 25 per cent, which is made more significant by an increase in the average weight of trains. Taking account of both speed and weight of trains in one average, we may note that the gross ton-miles per train hour increased from 14,877 in 1920 to 23,652 in 1928, an increase of nearly 59 per cent. Such a change in eight years may almost be called revolutionary.

Ernest I. Lewis, Chairman, Interstate Commerce Commission. Mr. McManamy Takes the Chairmanship Now Under the Rule of Rotation.

These results have only been secured by expending vast sums for additions, betterments, and for modern high priced equipment in place of the obsolete or inadequate equipment bought at low prices. The net addition to invested capital in excess of retirements has been as follows in the period under review:

Investments in New Lines, Extensions, Additions and Betterments, Less Credits for Retirements*

Year Ended December 31,	
1920	$544,463,696
1921	458,103,187
1922	342,137,181
1923	807,468,714
1924	723,515,806
1925	579,961,454
1926	666,099,293
1927	587,588,069
1928	468,186,135

Passenger travel, of course, is handled with ease; there is less of it than there was in 1920. In 1920 the passenger miles were 47,369,906,000 as compared with 31,717,566,000 in 1928, a decline of nearly one-third. And the decline has not yet been arrested. How to fill up their passenger trains and make a profit out of the curtailed passenger travel is one of the hard problems for the railway managers to solve.

After a period of friction between railway labor and management from 1920-1923, which burst into open hostility in 1922, the country is enjoying under the guidance of the U. S. Board of Mediation the benefits of peaceful cooperation in labor-capital relations. The average employe compensation per hour was 67.6 cents in 1920, fell to 61.0 cents in 1923, and rose to 65.5 in 1928, not far from the war-time peak. Notwithstanding the increase in average wages since 1923, the labor cost per unit of product, that is, per gross ton-mile, has declined as a result of the greater production per hour of labor resulting from the improved equipment and the better cooperation. The operating expense per gross ton-mile of both freight and passenger service has been estimated at 4.90 mills in 1923, 4.65 in 1924, 4.41 in 1925, 4.29 in 1926, 4.27 in 1927, and 4.06 in 1928.

For the pay roll element in operating expenses, taken by itself, the corresponding averages are: 2.79 mills in 1923, 2.71 in 1924; 2.58 in 1925, 2.49 in 1926, 2.51 in 1927, and 2.41

*Steam railways of Classes I and II and their non-operating subsidiaries.

in 1928. The reduction in operating expenses per unit of service as a result of increased capital expenditure makes it important to consider also the trend in the amount of capital used in rendering a unit of service. Figures on this point are available for the past six years:

Calendar year	Investment in road and equipment per gross ton-mile (Cents)
1923	2.067
1924	2.215
1925	2.145
1926	2.052
1927	2.133
1928	2.130

This average fluctuates to some extent inversely with the volume of business, but the tendency apparently is downward rather than upward.

The trend of rates and fares is indicated by the following average earnings per ton-mile and per passenger mile. These figures reflect the increases of 1920 and the 10 per cent freight rate reduction of 1922, and they also have been affected by changes in the composition of the traffic.

Calendar year	Revenue per ton-mile (Cents)	Revenue per passenger-mile (Cents)
1920	1.069	2.755
1921	1.294	3.093
1922	1.194	3.037
1923	1.132	3.026
1924	1.132	2.985
1925	1.114	2.944
1926	1.096	2.941
1927	1.095	2.901
1928	1.094	2.854

The net earnings of the railways have shown marked recuperation. For all operating steam railways the net railway operating income has been as follows, beginning with 1920:

Calendar year	Net railway operating income
1920	$ 12,100,759
1921	601,138,916
1922	769,411,093
1923	974,917,715
1924	984,463,481
1925	1,136,728,016
1926	1,229,020,188
1927	1,077,841,658
1928	1,182,467,353

For the first nine months of 1929 the net was 17.0 per cent over that of the same period of 1928, but the remaining months of 1929 may not show the same percentage of increase.

The Law in Big Business

To be successful in business, be a success in law. Judging from the number of lawyers who are chosen to head the country's greatest corporations, a legal training is of tremendous advantage to business success. A recent compilation mentions some of the most important companies which are headed by lawyers: Myron C. Taylor, chairman of the finance committee of U. S. Steel Corpn.; George H. Jones, chairman of Standard Oil Co. of New Jersey; George W. Cortelyou, president of Consolidated Gas Co. of New York; C. F. Kelley, president of Anaconda Copper Mining; Owen D. Young, chairman of General Electric; Henry W. De Forest, chairman of the board of directors, Southern Pacific; A. H. Harris, chairman of executive committee of New York Central Railroad, and Robert S. Lovett, chairman of Union Pacific; Hale Holden, chairman of the executive committee, Southern Pacific Co., and Fred W. Sargent, president of the Chicago & North Western. We may be in error but nevertheless we believe there are more former telegraph operators than lawyers or engineers holding railroad presidencies.

Offices of the Interstate Commerce Commission at Washington. Eleven Floors and a Basement, and Another Large Building Across the Street.

Enlarging Its Hospital Service

The Southern Pacific hospital department, established in the beginning of the road's operation 60 years ago, has grown until now it is a model followed by other railroads. The company and its numerous employes contribute to its maintenance. A large hospital is maintained in San Francisco. Edward S. Harkness, director and member of the executive committee of the railroad company, has recently donated $600,000 for the enlargement of the San Francisco hospital, and for the immediate construction of a modern tubercular sanatorium at Tucson.

A Decade of Railroad Progress

Increased Tempo in Transportation Since Federal Control Ended

By R. H. Aishton

President, Amn. Ry. Assn.

A RECENT study of economic trends in this country has yielded the conclusion that the outstanding factor of change during the past ten years has been an increased intensity or "tempo" of business. This means, as I understand it, that there have been no revolutionary changes in methods and processes, but that the methods and processes of ten years ago have been developed and made more effective.

Whereas, ten years ago in business methods and processes, we were relatively in low gear, during that period we have speeded up to second and are on our way upward to high gear. Since that time the railroads have improved their methods and processes so as to quicken the "tempo" of their operations to a higher gear, so that they have entered into a period of adequate service. This fact now needs no demonstration. Just as the proof of the pudding is in the eating, so the adequacy of transportation can be discovered in the satisfaction of the shippers. Over and over again, this satisfaction has been expressed voluntarily by the users of transportation in all parts of the country.

The continuity of private operation of railroads was interrupted by a hiatus of 26 months of government control. During this period the activities of industrial concerns in the country were confined largely to war necessities. As a result, the renewals of railway equipment did not proceed on the basis of the previous average yearly retirements and replacements. The effects of this policy were everywhere visible when the railroads were returned to their owners on March 1, 1920. Transportation service was interfered with by labor difficulties during 1920, by a severe depression in business generally in 1921 and, again, by extensive labor difficulties in 1922. The first year of what might be termed normal transportation since the war, began with 1923.

In that year, 1923, the railroads undertook the greatest capital expenditure of any previous year in their history. These expenditures have continued at a high level during the period since that date. For Class I roads capital expenditures of approximately 5800 million dollars have been made since January 1, 1923.

These vast capital expenditures have found definite expression in new cars, new locomotives and improvements, which include additional secondary tracks, passing tracks, yard tracks, new ballast, heavier rails, stronger bridges, and the like. As a matter of fact, they have found expression also in every branch of railroad operation. This vast expenditure is without question the primary cause of the increase in transportation efficiency that the shippers of this country have experienced during these past seven years.

A Winter Day in Washington

There have been other helpful factors in this decade of progress. For example, there has been developed a more complete coordination of car handling and car interchange between railroads. A remarkable example of this occurred during the past summer in the midst of the wheat harvest. Due to the great increase in the number of combined harvester-thresher machines in the winter wheat growing district of the Middle West, when the harvest came a mighty flood of grain flowed toward the railroads for transportation to primary markets. There were two or three carriers who were forced to bear the brunt of this onset of grain. It was not possible for them, even with their entire ownership of box cars repaired and available on their tracks at local stations, to have handled the grain during this brief period of its marketing. A call was made, therefore, upon other roads for assistance, both directly to the officials of these carriers and through the car service division of the American Railway Association. In answer to this call, more than 20,000 box cars were delivered to these lines that serve the great wheat growing areas to meet the emergency. Here is a cooperation and here is a coordination such as was unknown at the beginning of this decade of progress.

There has been also the most helpful cooperation from the shippers. Through the Shippers' Regional Advisory boards a clearer, mutual understanding of transportation service problems has been gained. Shippers have become much more sympathetic and responsive to the proved needs of the carriers. As a result, there has been more prompt loading of equipment and more prompt unloading of equipment, and there has been an increase in the use of available capacity of cars. It is obvious that such cooperation would directly contribute to the increased tempo of railroad operation.

It is worthy of note that within less than a decade, 1920 as compared

with 1928, the carriers, by economies in operation, have reduced railway maintenance costs and transportation expenses over one and one-quarter billion dollars. And right in this connection it is necessary to point out what careful attention individual railroad managements and the associations representing them have given to the means of realizing economies in railroad operation. Not only is extended research work being performed continuously by individual railroads, but the American Railway Association, through its various divisions, is a real laboratory of research.

Important items of research work either now under way or shortly to be started, include elaborate experiments under actual operating conditions to determine what improvements should be made to the present system of air brakes in order better to meet present-day operating conditions; investigation of all devices for automatic connection of air, signal and steam hose between railroad cars; tests to determine the comparative merits of ballast materials; study in cooperation with rail manufacturers with reference to reducing to a minimum defects in steel rails; tests to determine the causes of defects in car wheels; study of draft gears; of sanitation in relation to equipment and to coach yards; studies to attain greater utilization of locomotives and the conservation of fuel; investigation of means to develop the best preservative for cross ties, for preventing the splitting of ties, and for ascertaining substitutes for wooden ties, and a continued study of the standardization of sizes and types of railroad materials and supplies.

This period of study, of research and the application of the results of investigation has been a most important factor in the achievement of operating economy. Now, what are some of the results that have been attained?

It is of record that since January 1, 1923, there have been put into service 770,609 cars, either new or rebuilt as new. In the same period 14,234 locomotives, either new or rebuilt, were put into service. But it is significant that the highest point of ownership in number of cars occurred in September, 1925, despite the increase in the volume of traffic which the railroads have handled. Since that time, excluding refrigerator cars, there has been a decrease in the freight equipment of the railroads by 97,296 cars.

Correspondingly, the highest point of ownership in number of locomotives occurred in October, 1924. Since that time there has been a reduction in the number of locomotives owned by 7,436. And yet the carrying capacity of the cars and the tractive power of locomotives owned is greater now than at the time of the highest point of ownership. This means that with improved equipment each unit performs a greater service to the greater satisfaction of the shippers.

In increasing the railroad operation from low-gear to second and onward, there has been no neglect of care with respect to commodities handled. This is shown from the fact that the payment of claims in the past nine years has been decreased eight and one-half million dollars.

THE HIGHEST *point of ownership in number of locomotives occurred in October, 1924. Since that time there has been a reduction in the number of locomotives owned by 7,436. And yet the carrying capacity of the cars and the tractive power of locomotives owned is greater now than at the time of the highest point of ownership. This means that with improved equipment each unit performs a greater service to the greater satisfaction of the shippers.*

In 1923 the railroads were averaging only 261.6 miles per car per day while cars were in trains, computed on the basis of a 24-hour run. In 1928, for example, only five years later, the miles per car per day while in trains had increased to 309.6, an increase of 48 miles. In 1923 the miles per train hour were 10.9. In 1928 they were 12.9, or two miles per hour greater. It is confidently believed that this record will continue to grow better year by year.

There is the matter of miles per car per day. The record shows that in 1920 the miles per car per day were 25.1; in 1928, 31.3 and for the first ten months of 1929, 32.8.

It is apparent from the record that real progress has been made during the past decade in many branches of railroad operation. Interest, however, is gradually concentrating upon a single important problem, namely, the maximum utility of railway facilities. This has particular reference to tons per car. Excluding l.c.l. freight, the figures on car loadings indicate the performance of shippers and receivers of carload traffic. For 1920 these figures show tons per car of carload traffic originated 34.5 tons and for 1928, 35.0 tons. In this matter there is a divided responsibility, for the railroads must handle the tons which the shippers put in the cars.

Perhaps this point deserves some stress. It stands out like a purple thread among the other factors of this decade of progress. The faithful freight car is the burden-bearer of America's commerce. Its efficient use becomes the concern of all. Its ownership rests in the railroads but its service is at everybody's command. Nothing affects its efficiency more than the tonnage it can be made to carry. For example, in 1928, excluding l.c.l. freight, 35,737,406 carloads of traffic were handled in the United States with an average loading of 35.0 tons per car. If this average loading had been increased by one ton, it would have required 994,046 fewer carloads to have moved the same tonnage. Here is an opportunity for further progress. Here is the means for a nearer approach to high gear in railroad operation. The results of improvement here do not come solely to the carriers but are shared in by the shippers also.

The past decade has been a decade of real progress in railroad transportation. We are so close to it and the changes have been so rapid and so important that we are inclined to believe nothing like it has ever occurred in the world before. It is, nevertheless, an accomplished fact that progress has been achieved to the benefit of the carriers and the shippers. Adequate, efficient and dependable transportation service has for years been acknowledged as a most important factor in reducing inventories, in making capital available, in increasing the rate of turn-over for merchants and manufacturers and in keeping the producers more nearly in touch with a responsive market.

The past decade has been a decade of notable achievement. So far as I can see, there is no reason to believe that the next decade will see less important results.

"It is hard for a woman to understand statistics," said a government official to a friend.

"I guess that is so," said the other. "I told my wife the other day that for every passenger the railways of this country transported two tons of freight, and she wanted to know why the passengers were allowed to carry so much baggage."

Architect's Drawing of the New Union Station at Omaha Being Erected by the Union Pacific to Cost $3,500,000.

Three Engines Do the Work of 13

Remarkable Development of Modern Power, More Speed With Less Fuel

By Carl R. Gray

President, Union Pacific System

THE MOST notable achievements in steam transportation since the relinquishment of federal control have been the improvement of motive power, the inauguration of long engine runs, the reduction in terminal time, making possible greater number of miles per day per car, and the re-establishment of public good will and financial credit, which may be said to be the practical evidence of public confidence. In the past decade legislatures have enacted very little adverse legislation, realizing the public character of the railroad service and the necessity for protecting it from further burdensome losses.

Through the development of improved motive power, in the case of the Union Pacific for example, a passenger train is now handled from Omaha to Los Angeles, 1812 miles, with *three* engines as compared with *thirteen* engines to handle the same train in 1920; a heavy freight train is now handled over this same territory with *eight* engines as compared with *seventeen* needed ten years ago.

Statistics of the main line between Council Bluffs and Ogden, for example, for the years 1919 to 1928, inclusive, show that the ton miles handled, cars and contents, have increased 36 per cent; the ton miles moved per locomotive mile have increased 43 per cent; the miles per locomotive per day have increased 17½ per cent; the speed of freight trains has increased 24 per cent; and the ton miles moved per train per hour have increased 83 per cent. These results were accomplished by a reduction of 19 per cent in the number of locomotives on line; a reduction of 38 per cent in pounds of coal consumed per 1000 ton miles; and a saving of 43 per cent in repairs and enginehouse expenses per 1000 ton miles.

The advancement in train performance may also be illustrated by a comparison of fruit block movements. For example: In 1919, 143 fruit blocks originating on the Pacific Coast were run on the established schedule of 77 hours and 25 minutes between Ogden and Council Bluffs. Six of these fruit blocks made the schedule and 137 were late.

In 1928 there were 555 fruit blocks with the same origin and destination operated on a schedule of 65 hours, a saving of 12 hours and 25 minutes. Every one of these fruit blocks arrived on time.

The Union Pacific now has under construction at Omaha, a passenger terminal which, when completed, will represent an investment of approximately $3,500,000. In April, 1925, we dedicated at Boise, Idaho, a main line and passenger station costing about $3,400,000, and last spring there was completed at East Los Angeles a passenger station and terminal for bus lines, representing a new development in transportation methods, and costing about $150,000.

Also since federal control the Union Pacific has constructed terminal and shop facilities at Los Angeles, representing to date an investment of about $2,500,000; a local freight station at Ninth and Alameda streets in Los Angeles, representing, with

Ten Years' Progress in Motive Power

THROUGH the development of improved motive power, in the case of the Union Pacific for example, a passenger train is now handled from Omaha to Los Angeles—1812 miles—with *three* engines as compared with *thirteen* engines to handle the same train in 1920; a heavy freight train is now handled over this same territory with *eight* engines as compared with *seventeen* needed ten years ago.

land, an investment of $1,600,000 and for which there has been authorized an addition to be built during 1930 to cost $250,000; a passenger station at Ogden which cost $300,000; a freight house at Denver which cost $500,000, and improvements to the passenger station at Cheyenne which cost $200,000.

While these structural improvements have been under way the Union Pacific has completed the automatic block signal system between Los Angeles and Salt Lake City thus providing automatic protection for the entire distance from Chicago to Los Angeles, San Francisco and Portland. The work of installing signals in the remaining gap between Limon, Colo., and Ellis, Kan., is under way and will be finished by May 1 thus providing automatic protection also for the entire distance from Kansas City to Los Angeles, San Francisco and Portland through Denver.

Union Pacific Freight Terminal at Ninth and Alameda Streets, Los Angeles.

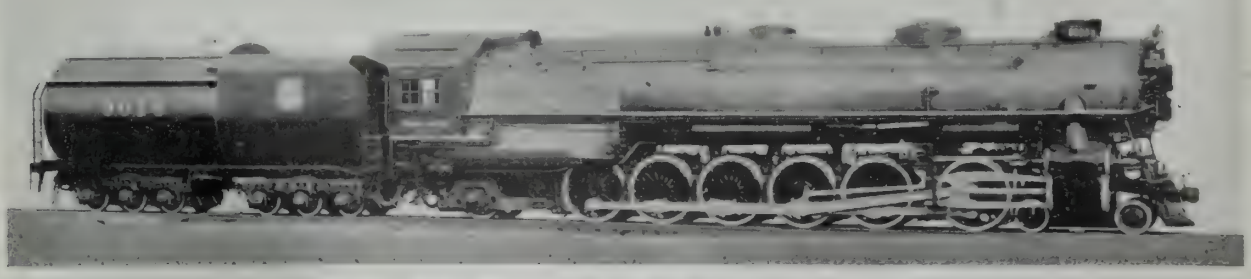
In addition to the foregoing, improvements have been made to the track and roadbed throughout by the installation of heavier rail, better ties, additional ballast, concrete tunnel lining, and the replacement of temporary bridges with steel and concrete.

During the past decade also the Union Pacific has carried forward its program of second main track construction. In the ten years, 1920 to 1929, inclusive, 200 miles have been built at a cost of about $14,000,000. At present the Union Pacific has a continuous double track from Council Bluffs to Salt Lake City, a distance of 1,028.9 miles. Branch lines and extensions during the past ten years have amounted to 395.6 miles, costing slightly more than $14,200,000. Included in these is the line from Lund to Cedar City, Utah, a distance of 33.17 miles, built at a cost of $1,109,000. The Lund-Cedar City branch forms a part of the Union Pacific program for the development of the company facilities in connection with the operation of the National Parks of Southern Utah and Northern Arizona. Aside from the branch line itself the expenditure for hotels, lodges, cabins and other facilities at Cedar City, Cedar Breaks, Kanab, and in Grand Canyon, Bryce Canyon and Zion Canyon National Parks, amounts to $3,500,000. Additional improvements planned for 1930 will cost $120,000. It is now possible for a passenger during the summer season to go by through Pullman from either the East or the West to Cedar City and there to board the commodious motor stages of the Utah Parks Co., a Union Pacific subsidiary, and make the tour of about 500 miles through the three magnificent national parks with all the comforts and luxury of the most modern travel and hotel facilities.

Radiating from the East Los Angeles passenger station, at the intersection of Atlantic boulevard and Telegraph road, six miles from the Central Station and outside the congested area, are three motor stage routes for the transportation of interstate passengers to and from communities tributary to Los Angeles. The inauguration of these motor stages in substitution for steam passenger service on branches to Pasadena, Long Beach and Anaheim not only makes possible a saving in operating costs but also provides more expeditious and more comfortable service to the passenger.

A passenger for Chicago or an eastern point, for instance, can now board the bus at a convenient point in Pasadena, Long Beach or Anaheim, only a few minutes ahead of the time the train leaves the Central Station in Los Angeles, and board the train at East Los Angeles. Conversely the passenger may leave the train at East Los Angeles, board the bus, and reach his destination in Pasadena, Long Beach or Anaheim at approximately the same time that the train reaches the Central Station in Los Angeles.

During the past few years particularly, the Union Pacific has engaged in a comprehensive industrial program in East Los Angeles, at Los Angeles harbor and Long Beach harbor, and along the Los Angeles River between First and Ninth streets. The efforts of the company have resulted in locating at Los Angeles and on



The 9000 Class Locomotive, Called the Union Pacific Type.

these properties such industries as the Ford Motor Company assembling plant, the Pacific Goodrich Tire & Rubber Co., the Samson Tire & Rubber Corpn., the Crane Co., the Los Angeles Can Co., the Kittinger Furniture Co., the Angelus Furniture Co., the Willard Storage Battery Co., the West Coast Foundry Co., the Continental Products Corpn., the Sterling Electric Motors, Inc.; Sears, Roebuck & Co., retail store, warehouse, mail order division and general Pacific Coast headquarters, and many other industries.

More recently the Union Pacific has engaged in a transcontinental motor stage service extending from Los Angeles in Southern California and Portland in the Pacific Northwest, by way of Salt Lake City, Denver and Cheyenne through Omaha to Chicago, with connections to the Atlantic Seaboard, and from Denver through Kansas City to St. Louis, with connections to important cities in the southern states. This motor stage service was inaugurated to help the rail passenger business by providing a more convenient feeder service and at the same time to compete with the present highway operators for strictly bus business.

The latest improvement in the motive power of the Union Pacific is the new Union Pacific "9000" type engine, which went into service for freight work during the past year. The outstanding features of the new engine are the addition of a third cylinder. The engine is 102 feet 6½ inches in length, 11 feet 2 inches wide and 16 feet 1½ inches high. With its tender, and ready for the road, it weighs 782,000 pounds and develops 5,000 horsepower, exerting a tractive pull of 96,600 pounds. The engine is capable of pulling a train of 125 carloads of freight slightly more than one mile in length, at a speed of 50 miles an hour. This locomotive is the largest non-articulated steam power unit ever constructed, and delivers more ton miles at less expense than any other prevailing type of steam locomotive.

In the first ten months of 1929 the American aircraft industry exported $4,775,235 worth of planes, engines and accessories, says a recent report just issued.

Improved Car Service

By M. J. Gormley

Chrm. Car Svc. Div. A. R. A.

All factors of railroad operating efficiency, and the units by which such efficiency is measured, have shown a steady improvement in the last 10 years. Freight service has vastly improved, passenger trains are on quicker schedule and are invariably on time, and are more luxuriously equipped. There are no more freight car shortages. Loss and damage to freight in transit has vastly diminished. Every industry which is dependent directly upon transportation now recognizes the importance of the time element and expects movement of raw materials from the source of production to the source of consumption on a schedule threefold quicker than the one acceptable ten years ago. What are some of the things which have brought about this achievement in improved freight transportation and car supply?

Mr. Gray

Expenditure for capital account has been and is being poured into the railroads to the extent of approximately $750,000,000 a year, notwithstanding their failure up to this time to earn the average return prescribed by the Transportation Act. Expenditures for new rolling stock, locomotives and freight cars; over 700,000 new freight cars have been installed in the past six years. Additional terminal and yard facilities. New facilities for train operation such as signals, automatic train controls, etc. Better morale among the personnel.

In 1922 the railroads experienced their last serious car shortage. Up to and including that year the shipping public customarily expected a car shortage in all classes of cars during the fall and winter. At one time this reached an average daily total of 179,239 cars. Since 1923 car shortage of any consequence has been entirely eliminated due to the more efficient use on the part of both railroads and shipping public of the transportation units. It is true there have been here and there isolated cases of shortage, but these have been of very short duration and without serious results and with practically no complaint. Demurrage payments to railroads for car detention have greatly decreased, indicating that shippers and receivers are more promptly loading and unloading cars placed for their use and disposal.

While the number of cars of revenue freight loaded has varied from year to year, there has been a gradual upward tendency, as will be seen by the following figures which are assembled and published by the car service division:

1920	45,118,472
1921	39,323,158
1922	43,207,561
1923	49,812,113
1924	48,534,433
1925	51,224,152
1926	53,098,819
1927	51,635,806
1928	51,586,000
1929	52,880,000

The last two weeks of 1928 and 1929 are partly estimated.

Against this record of increasing demand for freight transportation it is to be noted that the freight car ownership of railroads as a whole has decreased. As of January 1, 1920, the number of

Union Pacific Motor Buses at the New East Los Angeles Station.

M. J. Gormley
Chairman, Car Service Division,
A. R. A.

revenue cars owned was 2,316,129; as of December 1, 1929, this was 2,265,767. The high point of ownership since 1920 was in 1923 when it was 2,320,957. Thus it is seen that since 1923 with an *increase* in transportation requirements there has been a *decrease* in number of freight cars in service.

One of the principal contributing factors to this great achievement has been the hearty cooperation resulting from the organization of shippers regional advisory boards. The first experiment in the board idea was tried out in the grain producing states of Minnesota, North and South Dakota and Montana as a result of the serious car shortage experienced in that territory in 1922 when distress to the agricultural interests of those areas reached an acute stage due to their inability to ship their products to market. The proposal then made was that representatives of all shipping interests, including agricultural, lumber, livestock and milling etc., should get together with representatives of the railroads, the one to outline his requirements for transportation in detail and the railroad man to advise with similar frankness and honesty the extent to which such requirements could be met. The first estimate of the number of cars required within a definite period as presented by the shippers proved to be a most accurate statement of their ability to load and ship as stated, and the railroads were able to assemble sufficient equipment when and as required to meet the necessities outlined by the shippers. The experiment worked, and subsequently the entire United States has been divided into regions with natural economic boundaries, there being 13 such boards now and for over five years in operation.

These boards meet quarterly, or some less frequently, as circumstances require. A very definite relationship has been established by these means between the shipping and railroad interests so that railroads are at all times advised not less than three months in advance accurately of what transportation requirements are to be, which provides ample opportunity for the railroads individually and collectively to meet demands for cars when and as required.

An outstanding example of the benefits had from this form of cooperation may be cited from experience in the southwestern wheat growing areas in 1929. The combine harvester has come into quite general use within the past few years. Instead of the wheat being shocked and threshed at the convenience of the farmer with the movement to elevator and railroad car somewhat retarded, the combine threshes while reaping, and movement is immediate from the harvester to the railroad. This operation has increased the daily burden of the railroads during harvester season three or four-fold. As an example the demand for cars in the wheat growing regions on one railroad alone now exceeds 2,000 cars daily during the peak season, whereas ten years ago it scarcely exceeded 500. By means of the cooperative efforts established between growers and shippers and the railroads, the railroads have been able to assemble sufficient equipment to meet these demands as made.

There are two problems now before all of the boards equally important to the shipping public and the railroads: These are the heavier loading of cars, and the complete unloading of cars.

The average load per car has not increased materially since 1920, while the average capacity of the car has increased from 4.06 to 46.2 tons per car. The average load per car, all carload freight, is about 35 tons. An opportunity exists in practically all shipping for a very considerable increase in this figure. It is to the direct advantage of both the shipping public and the railroad that this increase should be achieved.

With respect to the complete unloading of cars. This refers to the consignee of the individual carload shipment completely cleaning the car of all debris, blocking, dunnage, and other material when shipment is unloaded, putting the car in condition for the next user. The freight car is a piece of property offered for use by the railroad as a transportation unit. It should be returned to the railroad in the same condition as given by the railroad for the shippers' use.

The New Viaduct at Cheyenne, Wyo., Built by the Union Pacific.

In the Foreground Are the New Piers of the Canadian Pacific at Vancouver, B. C., With One of the Company's Famous Steamships of the Empress Family Alongside.

Development of Power on the C. P. R.

A Remarkable Elimination of Obsolete Locomotives. Direct Steaming Adopted

By E. W. Beatty

Chairman and President, Canadian Pacific Ry.

STARTING in 1920, a thorough analysis was made of existing locomotive equipment of the Canadian Pacific. At that time locomotives were divided into two broad classes, first, those which through age, small capacity or weakness, or peculiarities in construction, could not be classed as economical units and would be retired as they worked out their economic life. This policy has been followed closely and undesirable power eliminated to the extent of 283 locomotives from January 1, 1920, to the end of the current year. The remaining equipment, classed as desirable power to maintain for service, was analyzed carefully and improvements planned which would give increased efficiency and reduced maintenance.

Stokers have been applied to the heavier types of locomotives to improve their reliability and increase their economic usefulness. Tenders of large capacity have been put in service with locomotives on bad water districts to eliminate the use of water from the worst sources of supply with consequent improvement in performance, reduction in maintenance, and deterioration of boilers.

With regard to new power added to our inventory during the period under review. The general demand on all railways has been for locomotives of increased capacity. In general, locomotive design has been along the lines of increased weight and size in order to obtain this and study has been made of the materials of construction for new locomotives.

During the past ten years a most thorough investigation has been made into various classes of cast steels, wrought steels both for general use and for staybolts, forgings, boiler and firebox plate. These investigations aimed at the production of metals that would not only give the greatest strength for design purposes but which would also resist abuse and misuse to the greatest possible extent.

It was early recognized that one of the most important factors in improving the serviceability of new power was increased boiler pressure. After an investigation in 1926 it was decided that the use of an alloy boiler plate would be adopted as a means of obtaining the greatest increase in boiler pressure without increase in boiler weight. The Canadian Pacific Railway, after some experiments, pioneered in the introduction of nickel steel boiler plate which was successfully produced, and is rapidly becoming the standard material for modern higher pressure locomotives. The locomotives constructed in 1926 with boiler pressure advanced from 200 to 250 lbs. after tests, demonstrated an improvement in performance both in fuel consumption and

in capacity of approximately 20 per cent. It was decided in 1928 still further to increase boiler pressures, and subsequently all locomotives constructed have had a designed working pressure of 280 lbs. per square inch. This has been accomplished with a minimum increase in weight which has been almost entirely due to improvements in materials of construction; in fact, in recent equipment constructed, not a pound of wrought iron is used in the boiler construction.

A further improvement originally introduced in 1926 was the use of superheated steam for all auxiliaries, which has not only improved auxiliary performance and reduced the size of piping but has indirectly increased the capacity of the boiler by reduced auxiliary steam consumption. The introduction of a new design of stoker on more recent power has also very greatly improved performance, and has incidentally added to capacity as the weight of stoker parts carried on the locomotive has been very substantially reduced, thereby permitting an equivalent weight being added to the boiler. Many other improvements in detail have also been instituted, all of which have had their effect upon improving the performance of locomotives which may be summed up by saying that a considerable gain in sustained capacity, acceleration and maximum speed has been obtained with very little increase in fuel consumption.

The entire improvement in locomotive service on the Canadian Pacific, both in the way of old equipment and by the addition of new, can best be summed up by quoting from an analysis of comparative performance. The system cost of locomotive service per 1,000 actual gross ton miles for 1928 was 62 per cent of the cost for 1920. The fuel consumption per 1,000 gross ton miles has decreased 22.5 per cent from 1920 to 1928. Shop and running repairs have decreased 33.5 per cent from 1920 to 1928.

The company has recently completed most important additions and improvements to its western ocean terminal at Vancouver, B. C. This city, which is rapidly forging ahead as one of the most important maritime centers on the Pacific Coast, was originally created by the Canadian Pacific Railway for its western terminus. The rapid increase in Trans-Pacific trade, particularly with Japan, China, Australia and New Zealand, has made these improvements necessary. With the object of handling efficiently this large volume of traffic, a new pier, known as "Pier B. C.", has recently been completed.

Ten Passenger Engines Like This Are Going Into Service on the C. P. R. Length: Engine and Tender, 91 Ft. Total Weight, 644,000 Lbs. Cylinders and Underframes Cast of One Solid Piece Weighing About 50,000 Lbs. Nickel Steel Boiler; Working Pressure 257 Lbs.; Tractive Effort, 45,300 Lbs.

Perhaps the most valuable single article handled through this port is silk, the transportation of which, from the Orient to the mills in New York, involves exceedingly keen competition, and its transfer from the ship and despatch across the continent must be performed with the greatest possible speed.

This pier, situated between the company's Piers A and D (which have been in operation for a number of years) is 331 feet wide and projects 1100 feet out into the inlet, carrying eight tracks throughout its entire length. At its shore end it is covered by a two-story headhouse which extends the full width of the pier. The upper floor of this structure contains a concourse, general facilities for handling passengers, baggage room, and office and storerooms for the Canadian Pacific steamship services. On the lower floor are storage spaces, driveways into the shed, and entrances for the eight railway tracks. The remainder of the pier carries two single story sheds, each 109 feet wide, which extend outward from the headhouse to the end of the pier, and lie on each side of a central depressed area containing four tracks. Each of these sheds is flanked on the ship side by a strip of area accommodating two tracks. The total covered storage space in this portion is about 202,000 square feet, and the trackage within this portion provides capacity for 200 freight cars.

Along the outer edge of the roof of the single story shed is a promenade, leading from the headhouse. This promenade makes a complete circuit of the pier and from it connections are made to the ship by gangways. By this means passengers are enabled to embark or disembark without in any way being inconvenienced by the handling of freight on the main deck below.

The two railway tracks which run along each side of the pier on the outside of the sheds are served by traveling gantry cranes, by means of which lumber, automobiles, etc., can be transferred directly from the cars to the ship or vice versa. The four depressed tracks which occupy the center of the structure between the two sheds are for the transfer of freight to and from the sheds, which have continuous sliding doors installed on both sides throughout their length. This feature enables freight to be transferred directly from the slings to cars on these tracks.

Fire protection is provided by over 5,000 sprinkler heads distributed throughout the pier, as well as by 50 interior and seven exterior fire hydrants. The substructure of the pier is composed of reinforced concrete piles, varying from 15 inches square to 23 inches square in section, and from 20 feet to 73 feet long. About 6000 of these were required.

The Canadian Pacific as one-half owner of the Toronto Terminals Railway is concerned in the construction of the Toronto Viaduct. This project consists of grade separation for all main line tracks along the Toronto waterfront and the providing of a new passenger station. In carrying out this work the exclusive Canadian Pacific coach yard and locomotive terminal, opposite the New Union Station, has been replaced in enlarged and modernized form.

For about two miles, the six main tracks and the service and station tracks are elevated on an earth embankment to such height as will permit of the streets passing under them without street depression. Then for about 1200 feet the 12 station tracks are carried on a concrete structure providing sub-track space for train waiting room, baggage, mail and other facilities.

Flanking this section to the north and facing on Front street is the station building. Across Front street is the Royal York Hotel of the Canadian Pacific Railway which is directly connected to the station by tunnel. From York street to Bath-

urst street, about one and one-half miles, the station tracks, the service tracks and the six main tracks descend on a light grade to the original track level, grade separation being secured by the streets passing over the railway tracks on bridges. South of, and adjacent to the new passenger station and extending from Jarvis street on the east to Spadina avenue on the west, about one and one-half miles, the Canadian Pacific is providing a modern coach yard and locomotive terminal at the same elevation as the main and station tracks.

The 32-stall enginehouse, which is centered around a 120-foot three-point-bearing turntable, is equipped for taking care of locomotives by direct steaming. Fires are dumped at the ashpit on the way to the house; locomotives are held under 160 lb. steam pressure in the house, the steam being provided by the power plant, and fires are started in out-bound locomotives by an oil firing apparatus situated beyond the turntable. This very effectively reduces the amount of smoke produced in the engine terminal and results in a much cleaner enginehouse.

Blank & Stoller Photo.

E. W. Beatty, Chairman and President, Canadian Pacific Railway.

A stores and office building, car repair building, mechanical cinder and coaling plants, yard office, bunk house, car cleaners' building, and all other modern facilities are provided. The coach yard has a capacity of 450 coaches.

The entire area on which this yard is being built has been reclaimed from Lake Ontario, necessitating the use of many thousands of concrete piles for supporting the various structures. At present about one-half the total area for this yard has been filled to final elevation as the old low level coach yard is being kept partly in operation until more of the high level facilities become available. It is expected, however, that the coach yard and locomotive terminal will be completed during 1930.

A very important structural improvement carried out in recent years was the lining of the double track tunnel in the Selkirk Mountains in British Columbia. This tunnel, which is five miles long, is one of the longest in America. The actual tunnel was completed in 1916 and, although it is constructed in solid rock through the greater part of its length, it was considered advisable to line it throughout with a thick casing of reinforced concrete in order to eliminate the hazard from disintegrated pieces of rock. This improvement was started in 1918 and finished in 1925. It was necessary to divert all traffic to one of the two tracks while the side adjacent to, and the roof above the other track was being lined. Generally speaking, the sequence of the principal operations was as follows:

Drilling and blasting ditches to make room for the concrete footings of the side walls; erection of the footing forms; pouring of concrete footings; drilling and blasting rock in the roof to provide space for placing the roof forms which were composed of steel; placing steel reinforcing rods; placing and bracing the steel forms in position preparatory to concreting, and, lastly, placing the concrete.

Owing to the difficulty of depositing concrete (especially in the roof and the upper portion of the walls) under such unusual conditions, the method by which this was effected is of some interest. A motor driven concrete mixer, mounted as high as possible on a flat car, was used. Concrete was blown into the space between the forms and the rock through three openings, two of which were conveniently situated for depositing concrete in the walls, and the third for depositing the concrete in the roof. Into each of these openings a section of six-inch rubber hose about nine feet long was inserted, fitted at one end with an extra heavy nipple and flange. Two 15-foot lengths of similar hose, joined together and fitted with nipples and flanges at both ends, connected the pneumatic placer on the mixer car to the nine-foot length of hose. The total length of six-inch hose, therefore, when connected for the act of blowing the concrete into any one of the openings was about 39 feet, care being taken to hold this hose clear of trains passing on the other track. The first air pressure used in blowing the concrete from the pneumatic placer through the hose and into the forms was 80 pounds per square inch. During the period allowed for the setting of the concrete another length of tunnel was prepared for concreting, and when this was ready the forms used to place the now hardened concrete were collapsed, overhauled, cleaned, moved ahead, and set up in their new position.

Owing to the special nature of the work, progress at the beginning was comparatively slow, but as the various crews became more familiar with the conditions and with the sequence of operations, there was a great increase in the amount of work done, which sometimes reached about 600 feet of finished lining monthly.

While work of this nature, carried on throughout a five-mile double track tunnel, is of necessity a very costly undertaking, it entirely eliminated a possible danger to the safety of traffic.

Progress in automatic block signalling has been constant during the last ten years. The company now has a total of 1,300 miles of road pro-

EDISON and his STORAGE BATTERY

Sixth of a Series of Historical Sketches Presenting the More Significant of Mr. Edison's Series of Experiments from 1898 to 1908 in His Search for a Dependable, Economical Storage Battery

(Reprints of previous issues will be mailed on request)

Edison Tests His New Battery

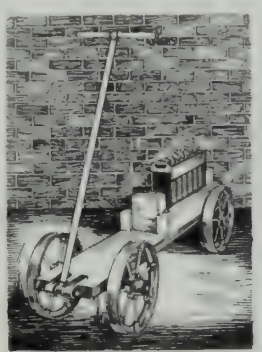
WHEN Mr. Edison was 22, he applied to the Gold & Stock Telegraph Company for a job. While waiting in the operating room the apparatus broke down and none of the employees could fix it. Edison offered to try, and because he succeeded was given a job as superintendent.

This incident so impressed him that in his own inventions he sought always to anticipate the possible causes of breakdown and guard against them.

Before he allowed his battery to go on the market he gave it all the abuse he thought it would be likely ever to receive in actual service.

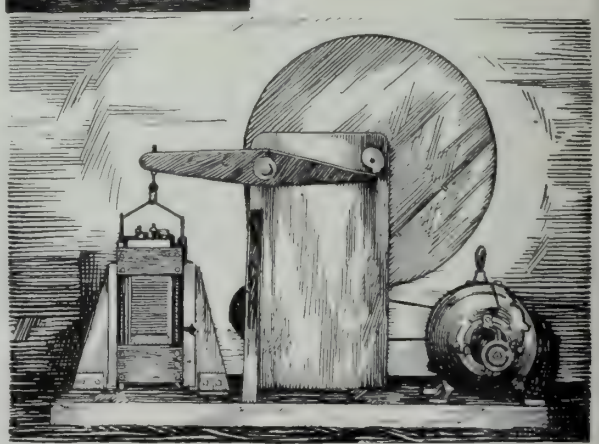
Knowing that an accidental short circuit is always possible, he charged his battery and then short circuited it 'till fully discharged. He recharged it and again discharged it through a short circuit, repeating the same test six times. No permanent injury resulted.

In thinking over other possible accidental abuses he charged it in the wrong direction. He let batteries stand idle for six months, some charged, some discharged, and some partly charged. Again he could discover no permanent injury.



Left: Mr. Edison had a battery secured to this truck and the truck hurled 1,9?? times against the brick abutment at a speed of 15 miles an hour.

Below: He also gave the battery approximately two million jolts by dropping it onto an oak block. Edison Batteries of current manufacture continue to receive the same test.



Two of Mr. Edison's tests on his new battery.

Then he tested physical ruggedness in the specially built "shock machines" illustrated on this page. Still he was unable to injure it.

Only then did Mr. Edison permit the first Edison Storage Battery to go on the market.

TRADE MARK Thomas A Edison

Edison *Steel Alkaline* Batteries give Economy ar
Control, Gas-Electric Rail Car, Signallin

EDISON STORAGE BATTERY COMPANY, ORANGE

In 1929—

Sales of Edison *Steel-Alkaline* Storage Batteries Exceeded All Previous Records and Purchasers Included 87 Railroads in the United States

THE sales history of Edison Storage batteries for 1929 contains two interesting features aside from the fact that volume set another high record.

When in the station, as well as when train speed is inadequate for axle generator operation, good car lighting depends entirely upon the storage batteries in the cars.

One feature is that in the railroad field, the heaviest purchasers were to be found among railroads that had been users of Edison Batteries for many years. Their buying judgment therefore was based on experience.

It is interesting to note, in passing, that among these railroads is one that maintains the most complete battery cost accounting systems we have ever seen. In its car lighting service, this road is now using Edison Batteries exclusively.

Another feature of the 1929 sales record is that it was achieved in spite of persistent refusal of old Edison Batteries to wear out. Many sold in 1911, 1912, 1913, and 1914, and still in service at the beginning of 1929, were expected to require replacement during the year. Instead, nearly all remain in service at the beginning of 1930.

However, the service given by these old batteries, as it becomes more generally known, is undoubtedly an important factor in the continued growth in Edison sales.

)ependability in Car Lighting, Multiple Unit
Iotive Power and Other Railway Services.

TRADE MARK
Thomas A Edison

J. , , , BRANCHES IN PRINCIPAL CITIES

tected in this manner. The signals used are upper-quadrant, electric motor-driven semaphore type, for the most part. However, in the eastern section of the country, the color light signal was made standard in 1927, and since that date all installations east of Port Arthur have been of that type. This change was not made in the western section of the country owing to the fact that the distribution of electric power is not so general. Numerous installations of highway crossing protection signals were also made, and the company has standardized for this purpose on the three-position wig-wag signal of the latest type.

The most important addition to the Canadian Pacific chain of hotels is the "Royal York" at Toronto, which was completed last summer. Another new hotel known as the "Saskatchewan" in the provincial capital at Regina, was built in 1927, with an extension completed this year. This building has 300 bedrooms, including a number of special suites, lounge, a ballroom and convention facilities. Also a new 100-room hotel known as the "New Pines" was built at Digby, N. S., which included in addition to the hotel building, a large concrete swimming pool. This hotel is operated by the Dominion Atlantic Railway, a subsidiary of the Can. Pac. Railway.

Extension to the Chateau Frontenac, 1921-1923, and the further reconstruction of the old portion of this building in 1926, making a modern 700-room hotel on the heights of Quebec overlooking the lower town and the St. Lawrence River. This building has a number of period and special suites, ample public space including convention hall, ballroom and similar facilities.

The reconstruction and extension of the old portion of the Chateau Lake Louise at Lake Louise, Alta., in 1925, making this into a fireproof structure thoroughly modern in equipment and furnishings. It is on the shores of Lake Louise 5,670 feet above sea level, and its great windows afford incomparable views of the lake and adjoining scenery. This hotel has nearly 400 bedrooms, including eight private suites, with ballroom, lounge, convention room and other public spaces. Also a large concrete swimming pool alongside the hotel.

The reconstruction and large extension to the Banff Springs Hotel in 1926-1928 with improved swimming pool accommodation and new 18-hole golf course. This hotel is in the valley of the Bow River 4,625 feet above sea level. Every window of the hotel affords superb views of mountain scenery. The hotel is fireproof throughout, 14 stories in height and contains 600 rooms, all with baths, including 38 luxurious period and special suites, with ballroom, conservatory, lounges, dining rooms and ample public facilities.

A 280-room extension to the Empress Hotel at Victoria, B. C., making a 600-room hotel with special suites, conservatory, ballroom, private dining rooms and other public facilities.

Editor's Note: A complete description of the Royal York Hotel, Toronto, will appear in an early edition.

Canadian Pacific's New 32-Stall Engine house at Toronto. A Thoroughly Modern Plant Equipped With Direct Steaming Facilities. Engine Fires Are Dumped Outside, Engines Enter Under Their Own Steam, and Leave Under Steam Supplied by a Power Plant. Notice: Not a Smoke Jack on the Structure!

1919--New York Central Lines--1929

The Record of Ten Years on One American Railroad Described

By Edward Hungerford

Grand Central Terminal, New York City, From the South End of Park Avenue. Statue of Commodore Vanderbilt, Placed Recently in Niche at Top of Ramp Crossing Forty-Second Street.

THE NEW YORK Central has no apologies for its record of steady progress for the past ten years—roughly speaking, a period of time just a very little bit more than that which has elapsed since the road emerged from government control and operation, and passed into the direct operating control of its owners once again.

Beginning at the point of view of its stockholders; the dividend rate on Central stock has been increased in ten years from five per cent to eight per cent. This last figure, at the present time, is more than comfortably earned. While in this connection it may be entirely pertinent to remark that the New York Central is one of the few railroads which in all the long years of its career has never passed through receivership and has never omitted paying an annual dividend.

To make this entirely satisfactory financial record for the past decade it was not only necessary actually to increase the traffic, both freight and passenger, upon its trains but also to achieve still further operating economies. The Central's record of more than 20 years past has been a consistent one of such savings—all of them achieved without lowering its service standards. Since the days of the World War and of government control, the road has not failed in this important phase of its activities. In 1919 its operating ratio was 80.04. In 1920, the year when it was emerging from governmental control and operation, this figure had risen, dangerously, to 93.89. At the start of this year of grace, 1929, it had been reduced to 75.51, and by this time it is still lower.

This has been accomplished in many ways. Not the least of them has been the increasing of the average tons per train mile of all freight from 891.07 to 933.73, and at the same time raising the number of tons of loaded cars per train mile from 34.34 to 37.30. In this connection it may be said that during this same period the freight revenue of the road per train mile was increased from $7.20 to $8.80.

The Central has not been spared the passenger problems of most of its fellows in the American railroad field during the past decade. In its short haul and local and branch line service, it has felt the loss of this traffic most keenly. On the other hand, the amount of passenger-riding on the longer runs, such as those from New York to Boston, to Chicago and St. Louis, for instance, has increased tremendously. The annual number of commutation passengers on the system has grown from 29,394,786 in 1919 to 49,113,665 in 1929. The result of these growths has been not only to maintain, but actually to increase the passenger earnings of the

New Style Car of the New York Central Between New York and Buffalo.

system. In March last (1929) it registered the heaviest March of any year in its entire history.

The obvious result of these great growths in certain forms of passenger traffic has been the multiplication not merely of commutation trains but of long distance and reasonably long distance through express trains. The Grand Central Terminal which, when completed less than 20 years ago, was thought to be large enough to meet all the demands of both the suburban and through traffic of the Central and the New York, New Haven & Hartford (which is affiliated in the occupancy of the terminal) for 50 years, in this decade already has found its facilities seriously strained. A temporary relief is coming to the station through the installation of a rather elaborate system of reverse signaling by which three, or, upon necessity, even four of the main line tracks into the terminal can be operated in a single direction. This sensible device will bring obvious relief at the height of the peak hour. Relief also has come not merely by adding commutation trains but through steadily lengthening them. This, of course, has involved lengthening the platforms of almost all the suburban stations. To enable this greatly increased commutation load to ride in seats, a new type of seating arrangement in the cars, seating two passengers on one side of the aisle and three on the other, has been installed.

Additional trains mean additional locomotives. The electric locomotive fleet of the Central has grown in ten years from 74 to 95 high-powered units. This, of course, does not take into reckoning the 22 additional passenger electric locomotives now being built for the operation of the new station at Cleveland and 37 oil-electrics for the freight terminal improvement very shortly to be begun on the west side of Manhattan Island.

Ten years ago but one 20-hour train ran in each direction daily between New York and Chicago. This was the Twentieth Century Limited, and the occasions when it ran in more than one section were marked and unusual. The train averaged in those days from nine to ten cars to a section. Nowadays it rarely ever runs in a single section. And while 12 cars has been made the standard maximum length for the Century frequently it runs in three and four sections, while five and six and even seven are by no means unknown.

Because of this tremendous pressure upon this, the world's premier train, a train which in a single day has hauled 899 revenue passengers in one direction, or more first-class passengers than a huge transatlantic liner will carry, it has within the last few months been relieved by the addition of other 20-hour trains. So that today the New York Central operates in both directions between New York and Chicago no fewer than nine regular 20-hour trains, a service considerably in excess of that offered by any of its competitors.

An interesting development along the Central has been that of local or short distance express trains upon the branch lines of the system. The road has not been content to sit idly back and see its passenger traffic go to the buses or to any other form of automotive transport. It believes that much of that traffic should remain on the steel rails. And so it has preferred to make a careful and intensive study of the possibilities of betterment of side line services. An interesting case in point, and one which is quite typical of others is between Syracuse and Watertown in the state of New York, where ten years ago four local trains covered the 73-mile distance, each of them making all stops and none of them making the run in less than three hours.

Today there are five trains between these two cities, in one direction, and six in the other, and two of these trains, non-stop, make the run in an hour and fifty minutes. Pullman cars have been added and equipment bettered. The direct response to this improved service has been increased traffic.

An interesting factor in the development of the passenger traffic has been not merely an increase in passenger equipment, the number of dining cars, for instance, having been raised from 75 to 177 (not including 21 cafe and lounge cars), but in the perfection of the equipment itself. The highly modern single-room sleeping-car has been introduced between Chicago and Cleveland, Chicago and Detroit and between New York and Rochester and Buffalo, with further installations in immediate sight.

A new type of combined lounge car and open-section sleeper has been developed by the Pullman Company for the New York Central and it has proved to be of large popularity. In the newest day-coaches on the system the cars are the individual seat type, that has come into quick popularity

A New Sketch by Walter L. Greene Showing the New York Central's Famous "Centuries" at Buffalo.

on several roads. In fact, to further traffic on its day-coach services, the Central has, within the last two years or so, introduced all-day-coach-de-luxe expresses between New York and Buffalo, Buffalo and Chicago, and Detroit and Cincinnati. These trains, provided with club cars, dining cars and observation-lounge cars and all with no extra charge whatsoever to the passenger, have proved themselves popular. On the western end of the system they have been painted in extraordinarily gay colors of brown and cream, which adds tremendously to their attractiveness to the prospective traveler.

The installation of so many fast through trains has in turn brought large demands upon the road's motive power. These have been met, in large degree, at least, by the creation of a new type of steam passenger locomotive, which the Central considers second to none that are operated anywhere else in the world. This new "Hudson-type" of locomotive, 96 feet in length and equipped with every forward-looking device that can be imagined, has, as its outstanding feature, its ability to maintain a maximum power at a maximum speed. Put to it, one of these engines can haul a ten or twelve car all-Pullman train quite easily at 80 miles an hour or upward.

In keeping with the steady improvement of its rolling stock employed in its passenger transportation, the New York Central has not lost sight of its station facilities. Within the past decade, a number of magnificent stations have been built upon the property. Of these the outstanding structure is the new 58-story union station, which is just now being completed and opened at Cleveland. For this magnificent structure, which is to cost upward of 50 million dollars, the New York Central has furnished 93 per cent of the capital. It will furnish at least an equal per cent of the traffic that will pass in and out of the terminal.

It owns entirely the new Central Terminal at Buffalo, which was opened in June, 1929. While this structure with its approaches represents a considerably less expenditure than the vast Cleveland enterprise, it is, in itself, one of the handsomest and most modern railroad stations to be found anywhere. Built in the modern American type of architecture, its great beacon tower stands as a landmark above Buffalo, and the completeness and the perfection of its facilities are the admiration of every traveler that passes through its portals. Other large new stations, slightly smaller but offering the most modern types of comfort and facilities, are those built within the last few years at Springfield, Mass., at Erie, Pa., and South Bend, Ind. At the present moment plans are being finished for a splendid passenger terminal at Syracuse, N. Y., while the Central will also share in the union station just being started at Cincinnati.

The freight traffic situation of the Central is oddly enough expressed in an actual decrease in freight locomo-

tives of from 2987 to 2809. This, of course, does not even hint at the increase in the total horsepower of the road's freight pulling, however, as each individual unit now used has been vastly increased in size and pulling power. Mere numbers in rail stock figures mean nothing on the American railroad today. The Central's freight fleet in the decade has actually dropped from 144,843 to 140,641, yet at the same time the total capacity of these cars has been raised from 6,051,365 to 6,655,758 tons, giving an average capacity per car of 47.90 tons as compared with 42.24 tons ten years ago.

Again, as in the passenger traffic, the expression of improvement in freight service on the part of the road is not merely in cars and locomotives. It is a story of vastly extended yards, shops and freight houses. Typical of these outstanding improvements has been the new Alfred H. Smith Memorial Bridge over the Hudson River at Albany, a high-level structure which, with its elimination of grades and curvature and the tremendous new classification yards into which it leads at its west end, has proved itself to be of vast service in the heavy freight movement over the main stem not merely of the Central, but of its leased and affiliated Boston & Albany.

An interesting feature of freight car development upon the system has been the car retarder, which was the co-invention of the late George Hannauer, for a number of years a vice president of one of the New York Central Lines, and more recently, president of the Boston & Maine Railroad. This most ingenious device expedites the movement of freight, reduces the cost of switching and eliminates a fruitful cause of accidents. It is to be placed in the same category with the train control system, which now extends upon the main line of the Central all the way from New York to Chicago, and which is being steadily added to side lines. The value of this most humane railroad device does not need to be set down here in detail.

Here in brief is the record of the New York Central for 1919 to 1929. It is a record of which no railroad needs be ashamed. It is a record in which New York Central has honest pride.

"Many of our greatest careers begin at fifty."—*Darwin P. Kingsley.*

"Every human being is a sample: the only one of his kind."—*William Wrigley Jr.*

Notable Progress on the K. C. S.

By C. E. JOHNSTON
Prest. Kansas City Southern Ry.

The notable advance in steam transportation, brought about in the last ten years, is the result, in our opinion, of more efficient management, by closer supervision of operating forces, the closest of scrutiny and rigid adherence to budgets covering operating expenses and to the heavy expenditure made for improvements to physical property to

C. E. Johnston

reduce operating expenses and to take care of increased traffic.

Heavy expenditures have been made for improving classified repair shop facilities; very liberal expenditures for replacement of obsolete machine tools; improved enginehouse, boiler washing, and other engine terminal facilities; longer and heavier turntables; improved locomotive water supplies, with chemical treatment in some instances; improvements in the type and capacity of power plant equipment; systematic classified heavy repairs to freight and passenger equipment, including strengthening, the use of better materials; modernizing of locomotives through the application of superheaters, improved valve gear, brick arches, enlarged tenders with increased fuel and water capacity; the use of alloy steels and higher quality of non-ferrous metals for important locomotive parts; closer attention to drafting of locomotives, better lubrication and closer attention to firing, and to the handling of trains.

A comparison of some of the results of the foregoing is indicated by figures at the bottom of this page taken for September, except where noted.

The outstanding improvements during the period, 1920 to 1929, inclusive, have been, extensive improvements to our mechanical facilities at Pittsburg, Kan.; construction of new classification yard, separation of several congested railroad crossings and reduction of main line grade at Shreveport; in cooperation with the City of Shreveport, construction of new city water supply, which provides better quality and satisfactory quantity of water for locomotive use; completion of 13.2 miles low grade line from Leeds (Kansas City) to Grandview, Mo.; beginning of construction of transportation and classification yard and engine terminal at Dowling, Texas; participating with other interested roads in the construction of a passenger station facility at Texarkana, Texas.

"There is nothing worse in public life than the solemn dinner."—*James J. Walker.*

They do not easily rise whose abilities are repressed by poverty at home.—*Juvenal.*

	1920		1929
Average cars on line daily	6,692		6,486
Cars unserviceable	339		260
Per cent unserviceable	5.1		4.0
Freight locomotives unserviceable	15.5		11.2
Passenger locomotives unserviceable	30.7		20.9
Freight car miles per car day	40.8		53.2
Lbs. of coal per 1000 GTM (excl. loco. and tender) (freight service)	164		100
Lbs. of coal per passenger train car mile	18.3		11.0
Locomotives owned (14% dec.)	185		160
Average tractive power of locomotives—			
Class I roads (21% Inc.)	33,635	(1928)	43,845
K. C. S. (35% Inc.)	41,765	(1928)	56,318
Freight train miles (Oct.) (18% Dec.)	234,295		190,558
Gross ton miles (Oct.) (17% Inc.)	345,653		406,075
Transportation cost selected expense accounts per 1000 GTM (excl. loco. and tender) (54% Dec.)	$1.448		$0.671
No. of employes (excl. of executive position) (Oct.) (17% Dec.)	5,517		4,617

The Railroads' Gift to Industry

Southern Pacific Bridge Over the Colorado River at Yuma, Arizona.

By Paul Shoup

President, Southern Pacific Co.

IN TAKING for the theme of its Progress Edition, "The advance and improvement in steam transportation since the railroads were released from federal control," *Transportation* has chosen a subject that is very closely related to the prosperity and general well being of the entire United States.

The railroads' most important contribution to industry has been the faster movement of freight. Increased efficiency since 1920 has, in effect, added 500,000 cars to the daily average movement. Referring to this J. J. Bernet, president, Chesapeake & Ohio Railway Company, was quoted the other day as saying:

> Roughly speaking this has been the equivalent of $750,000,000 of new capital: $45,000,000 on the cost of such new capital: $30,000,000 for depreciation charge, and $75,000,000 in repair charges. All that money has gone back into the industrial, commercial and individual prosperity of the country. The reduction in the turn-around time of the average freight car has saved shippers at least $50,000,000 in interest charges. How many millions of new capital and how many millions in interest charges have been saved by reducing the necessity of carrying needlessly large stocks of goods, nobody actually knows.

The Southern Pacific has been an important contributor to this result. To illustrate: In 1920 the schedules for perishable freight from Colton and Roseville to Chicago were from 180 to 189 hours. The schedule today through both points is 146 hours, and when it is considered that this affects more than 175,000 loaded refrigerator cars a year it can be appreciated that this particular improvement in Southern Pacific service is a direct benefit to the agricultural interests of California and a help to all users of fresh fruit and vegetables throughout the United States.

Both freight and passenger service have shared in this increase of usefulness. These improvements didn't "just happen." They are the result of constant research and study, and substantial capital expenditures.

Here are some of the factors that have contributed to this increased efficiency:

Construction of many miles of second track. This included tunneling for two miles through the granite of the Sierra Nevada.

Lengthening icing docks on Overland and Sunset routes, making it possible to ice entire fruit train in one operation.

Yard changes at Roseville, Sparks and Ogden.

New yards at Stockton, Santa Clara and Fresno.

Construction in connection with Pacific Fruit Express Company, of icing plants at Bakersfield, Fresno and Bayshore, and enlargement of plant at Roseville.

Construction of additional units of classification yard at Los Angeles.

Heavier rolling stock and locomotives necessitated heavier rail and more and better ballast. We have increased our ballast requirements 33 1/3 per cent. In 1908 90-pound rail was the standard for main line service. In 1923 we began to use 110-pound rail. In the mountain districts where there are sharp curves 130-pound rail is now used. More than 200 miles of track has been equipped thus far with this 130-pound steel.

We are now using creosoted ties. To provide these and meet our yearly renewal requirement of approximately 2,750,000 ties, we built and now operate creosoting plants at Alamagordo, New Mexico; Wilmington, Oakland, California; and Eugene, Oregon.

Improvement in track alignment and grade reductions have received constant attention.

We built a new steel bridge across the Colorado River at Yuma, and expect before the end of 1930 to have completed the $12,000,000 bridge across Suisun Bay to take the place of the Port Costa-Benicia train ferry.

We have improved our motive power during the last ten years by modernizing old equipment, and the construction of new power scientifically designed to meet the growing

demand for large and faster trains. Old equipment has been improved by the application of superheaters, feedwater heaters, boosters and improved lubricating devices. The new power is provided with boilers of greater capacity than the old power and carrying higher steam pressure. This makes it possible to operate them on runs three or four times the length formerly made. Some of these runs are nearly 900 miles in length, covering four divisions.

The increased efficiency of our power in handling freight over the Sierra Nevada between Roseville, Calif., and Sparks, Nev., is told in the following table which shows in percentages, the improvement in 1928 over 1920:

Train miles	2.26
Locomotive miles	23.10
Gross ton miles	35.05
Gross train load	32.06
Gross locomotive load	9.74
Speed of trains (M.P.H.)	50.67
Gr. ton miles per train hour	99.49

Southern Pacific Creosoting Plant at Wilmington, Cal., Showing Monorail Crane.

tives; and the modernization of other heavy freight power; the purchase of steel underframe box cars and steel open-top cars; the installation of water treating plants; the building and extension of yards and sidings and the purchase of improved shop machinery and tools of modern type.

The most extensive project is the revision of line and grade between Mount Pleasant and Corsicana, Texas, a distance of 142 miles. This improvement includes the laying of new 85-pound rail and application of ballast; also the construction of a modern freight terminal of greater capacity at Tyler, Texas. Grade was reduced from 2 per cent to 1 per cent. and curvature from 10° to 4° maximum, resulting in the elimination of 1,441 degrees.

During this period 36 heavy freight locomotives were purchased; 42 locomotives superheated and equipped with other modern appliances; 152 locomotives were converted from coal burners to oil burners.

Late in 1927 the Southern Pacific and ourselves concluded that we could open a new transcontinental route to California by using the Southern Pacific from California through El Paso to Corsicana, Texas, thence via Cotton Belt to the river crossings at St. Louis and Memphis.

Our efforts through the latter part of 1927 met with such success that we concluded to rebuild our line from Mount Pleasant to Corsicana, a distance of 142 miles.

This business continues to grow, and this is now an established route both for the fast movement of eastbound perishables and also westbound merchandise and manufactured products, as our schedules compare favorably both in time and dependability with that of our competitors. In fact, our business to the entire territory west of El Paso has been most satisfactory all this year.

The Cotton Belt

By DANIEL UPTHEGROVE
Prest., St. L. & S. W. Ry.

The most notable advance in steam transportation since 1920 has been the great reduction in time required to transport passengers and commodities, and the dependability of service rendered at the increased speed.

We have carried out a systematic program of improvements, the principal items of which include the laying of heavier rail, improvement of drainage, additional ballast, and strengthening bridges on the entire main line; the revision of line and grade between Mt. Pleasant and Corsicana, Texas; the purchase of modern freight locomo-

In the Southern Pacific Creosoting Plant at Wilmington; Boring Mill Interior Showing Incising Machine With Conveyor.

Frisco's Great Runs

By J. M. KURN
Prest., Frisco System

Without doubt the most notable advance in steam transportation since the return of the railroads to their owners in 1920, has been the expenditure of billions of dollars in enlarging and improving the capacity of the railway plant, which has made it possible for the railroads to work out great economies in

Sacramento Station of the Southern Pacific Showing the Track Layout.

operation and render much more efficient service. Our railroad has contributed to the situation by the construction of new mechanical plants, notably East Thomas, (Birmingham) Ala., Lindenwood, (St. Louis) Mo., and Yale, (Memphis) Tenn. Also in the laying of new and heavier rail, replacing lighter rail, widening embankments, correcting alignments and reducing grades; in the increased capacity of locomotives and cars and the very marked improvement in the condition of our rolling stock, which was in a deplorable condition when the railroads were returned to their owners in 1920.

Special interest attaches to the new mechanical plants at East Thomas, Lindenwood and Yale. In this connection, I think I should mention that our railroad was the pioneer in establishing long runs of locomotives without enginehouse attention. For example, from St. Louis to Oklahoma City, a distance of 541 miles; from Kansas City, Mo., to Birmingham, Ala., a distance of 735 miles; and from Kansas City, Mo., to Sherman, Texas, a distance of 483 miles. I call particular attention to the endurance record of Engine 4113, coal burner, traveling 7350 miles without knocking fire, more than doubling the former world's record. These remarkable performances were described in *Transportation* shortly after they were recorded.

The changes and improvements in our motive power in the last ten years have been mostly in providing superheaters, boosters and siphons, also the scrapping of a lot of small power and replacing with larger superheater locomotives.

Engine 4113, which made the endurance record referred to, is typical of our freight locomotives today. This is Mikado type 2-8-2, with tractive effort of 59,800 pounds. Our 1500's, Mountain type 4-8-2, tractive effort 54,100 pounds, are the last word in passenger locomotives. We have contracted, for delivery in April, May and June of next year, for 20 new freight engines, which will develop a tractive effort of 68,000 pounds, which is the last word in the heavy Mikado-type freight engines.

Alaska Builds 57 Airports

Governor Parks, one of the foremost aviation enthusiasts in Alaska, announces that there are 57 airports in the territory now, representing an expenditure of $150,000.

Realizing the commercial advantages of airplane transportation and communication in this "land of distances," the public has encouraged the construction of the landing fields wholeheartedly, he said.

"Districts that were before weeks away from here and Nome are now brought within a few hours by flying," Governor Parks said. "Business has boomed in outlying towns and villages. All phases of activity have benefited, even the courts. Jurists are transported to places to settle suits and try criminal cases that were before neglected."

Connection of the large cities in Alaska with those in Canada and the United States by airways will be the next scheme exploited by airlines, the governor intimated. The growth of aviation in Alaska now that the pioneering work is done, will be gradual, he expects.

Flying conditions in Alaska during the summer are ideal, air officials contend, pointing out that they compare favorably with weather conditions in California and the Pacific Coast. In the winter, skiis will be attached to the landing gear of the planes.

Evolution of Flying Took 200 Years

The first serious attempt to fly was made by a Seventeenth Century youth, who used an umbrella and curved canvas wings which he flapped by waving his arms and legs. Flying was then thought even more impossible than perpetual motion. This chap had a bad fall.

Between the birdman and the motor-driven airplane came De Groof's flying machine, with huge wings operated by ropes, which performed marvelously on the ground; but the ropes got fatally tangled when he jumped from a cliff. And he fell hard.

There were many missing links, but in 1903 Orville Wright succeeded in flying 852 feet in his 16-horsepower plane. Since then aviation has developed rapidly, the speed having increased at the rate of about 13 miles per year. The record is now held by A. H. Orlebar—368.8 miles an hour—which is faster than six miles a minute.

Here's the Busy Lackawanna Again

An Important Plan of Construction, With Power Enlargement

By J. M. Davis

President, The D. L. & W. R. R.

THE MOST valuable contribution of the railroads to the welfare of this nation and its people and, incidentally, to themselves, since the roads were returned to the owners in 1920, is the general improvement in their service which, today, is the best and the most dependable this world affords. Their reliability of performance has made possible the handling of the largest gross business in history, with tremendous savings to shippers, undreamed of reductions in inventories by manufacturers, jobbers, wholesalers and retailers and the release of nobody knows how many hundreds of millions of dollars of capital and credit for use in other prosperity-producing channels.

The Lackawanna contributed its share of this constructive progress to the common good. Outstanding among these is our new terminal warehouse, which we expect to place in service in March, 1930. This is to be the largest under one roof on the Atlantic seaboard, devoted exclusively to general storage, warehouse and distribution purposes, occupying a 15-acre tract in Jersey City. It will be eight stories high with basement, 846 feet long, 162 feet wide, strictly fire and weather-proof throughout, situated on one of the most strategic spots on the Jersey shore. Previously we had no such facilities there.

Other construction: Pier No. 10, at Hoboken-Jersey City, 1,200 feet long and 40 feet wide. This pier provides 1,200 feet of additional berthing space for ships, carries two tracks, spaced wide enough to permit the use of a revolving crane, making possible the speedy handling of heavy freight direct from cars to boats or vice versa.

A lake freight house and dock at Main street and the Buffalo River at Buffalo. The freight house is 835 feet long, varying in width from 113 to 48 feet, with a floor space of 60,000 square feet, while the concrete dock alongside the building is 860 feet long, 10 feet wide and supported on concrete caissons bearing on rock. The old freight house was not so conveniently arranged or of such great capacity.

A classification yard, with a capacity of 1,288 cars, at East Binghamton, N. Y.

The largest retail, concrete, gravity coal pocket and steel trestle in the nation at our South Brooklyn terminal. This pocket is 300 feet long, 40 feet wide and 35 feet high, topped by the trestle, has a holding capacity of 4,500 tons; 38 trucks can load simultaneously; handles Scranton anthracite exclusively.

A modern steel car repair building with concrete foundation and cement-tile roof, 690 feet long and 105 feet wide, at Buffalo.

A 125-foot, bascule span, steel bridge over the Buffalo River at Buffalo.

Modern passenger stations at Lyndhurst, Passaic and Paterson, N.

Pusher Service Isn't Needed on the Lackawanna Limited Trains Between Hoboken and Scranton When Pulled by This 4-8-4 Pocono Type Locomotive Weighing 637,000 Lbs. Now Go On With the Story.

J., including the rearrangement of the driveways and the landscaping of the surroundings. Of these, Paterson is the most outstanding, by reason of the elevation of the tracks at that point. Much of this work has been described in *Transportation*.

The installation of automatic train control on our double-track main line between Buffalo and Scranton, Pa., involving 256½ miles of road and corresponding equipment on 217 passenger and freight locomotives.

The installation of color light signals on 75 miles of road.

The addition of third track between Kearny Junction and Harrison, N. J., and third and fourth track between Lyndhurst and Paterson and Lincoln Park and Dover, N. J., a total of 23 miles, all 130 pound rail.

The construction of an under-pass just east of Dover.

An important seven-mile industrial cut-off line between Harrison and Kearny, N. J.

The completion of a three-track lift bridge over the Hackensack River between Hoboken and Newark, succeeding the former, low-grade, two-track swing bridge. The new bridge has a clearance of 40 feet in closed position and 135 feet when open, compared with 12 feet for the old bridge, has eliminated about 72 per cent of the delays incident to water-traffic interference, and has most effectually speeded up the handling of traffic in that zone.

The laying of rail: 75,000 tons, or about 365 miles of 130-pound, 16,000 tons or about 80 miles of 118-pound, and 115,000 tons or about 650 miles of 105-pound.

The substitution, in 1929, of a fleet of powerful high-speed 4-8-4 Pocono type, freight locomotives weighing (engine and tender) 707,000 pounds each in fast main line service, for a larger fleet of 4-6-2 Pacific type freight engines weighing (engine and tender) 456,400 pounds. The new engines handle an increased load of 66 2/3 per cent over the former type at the same speed and, owing to greater fuel carrying capacity, (22 tons of coal and 15,000 gallons of water, compared to 10 tons of coal and 9,000 gallons of water) have reduced the number of operating stops by half.

The substitution of 4-8-4 Pocono type passenger power (weighing, engine and tender, 637,000 pounds), carrying 14 tons of coal and 12,000 gallons of water, for Pacific type power (weighing, engine and tender, 484,800 pounds), carrying 10 tons of coal and 10,000 gallons of water, on limited trains between Hoboken and Scranton. This new power walks right up the long, stiff grades in the Pocono Mountains with 10-car all-steel trains, without pusher service.

The re-equipment throughout of the Lackawanna Limited, our crack daylight train between New York and Buffalo.

The continuation of our extensive program for the elimination of dangerous grade crossings on which work this company already has spent approximately $29,000,000 in New Jersey, New York and Pennsylvania.

Began in 1929, well under way at this time and to be completed in 1930, is the electrification of 70 miles of road, carrying 160 miles of track, in our Northern New Jersey suburban territory.

Expansions and improvements of second-line importance are numerous. The capacity and the efficiency of the entire railroad have been stepped up. So also has the equipment of the marine department been increased. The 70-ton all-steel hopper-bottom car has appeared, also the 55-ton steel freight car, and the steel under-frame passenger has given way to the all-steel passenger coach.

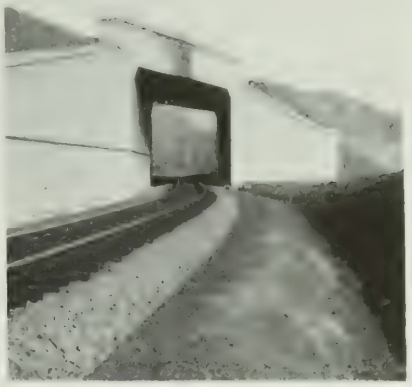
Additional Tracks, Third Between Kearny Jct. and Harrison, N. J., and Third and Fourth Between Paterson and Fourth Between Paterson and Lincoln Park and Dover, N. J., all 130 Pound Rail.

What Good Service Means

By H. A. Scandrett

Prest., The Milwaukee Road

This nation entered the World War in April, 1917, and at midnight, December 31, 1917, operation of the railroads was taken over by the government. As could only be expected, this transfer of the operation of so large and complex an industry in which everything was sacrificed to winning the war, resulted in a serious breakdown in the morale of the organizations and the physical condition of the properties so that, on the return of the operation to private management on March 1, 1920, railroad executives and their employes were confronted with what seemed to many the well-nigh hopeless task of rehabilitating and restoring the properties to their pre-war efficiency as peace-time agencies of transportation.



How the Lackawanna Avoids Grade Crossings.

This has not only been accomplished, but the physical condition and operation of the railroads has been brought to a pitch not dreamed of before, and which more than anyone factor has made possible the unprecedented prosperity which the country has enjoyed during the past several years and still is enjoying.

The tangible result of the great progress that has been made in the improvement and operation of the railroads is the speed and reliability of their freight service. This has worked an economic revolution in industry in what has been termed "hand-to-mouth buying." The economic importance of this is easily understood when it is realized that inventories carried by all classes of industry in the United States, including the railroads themselves, run into many billions of dollars, and that the cost of carrying, including interest, depreciation, storage, insurance and handling, is from 20 per cent to 25 per cent. Just what reduction in inventories has been made possible as a result of this improved service the railroads are rendering is not known to me, but as a conservative estimate I should place it at several billion

The New Pier No. 10 at Jersey City Is 1200 Feet Long and 40 Feet Wide.

dollars, and the resulting saving in conducting the nation's business close to one billion dollars a year.

Another very important economic factor to which the service the railroads are now giving has contributed is the stabilization of commodity prices. The business depression of 1921 was due primarily, if not solely, to the inflation of commodity prices in 1919 and 1920. While I should hesitate to say that such inflation is a thing of the past, I do believe the reduction in inventories which railroad efficiency has made possible is a long step in that direction.

The manner in which this improved efficiency in railroad transportation has been brought about in so short a time since the properties were returned to private management at the close of the war; with wages higher than they have ever been, with the exception of 1920; with a general reduction in rates in 1922, and a continued decline since, and in the face of severe competition by highway and water, which has resulted in a yearly loss in passenger revenues since 1922 of approximately $300,000,000, is, I think, one of the remarkable pages in the history of American industrial development, and is, in my judgment, the most notable advance in steam transportation for the nation at large since the return of the railroads to their owners in 1920.

I can point to no particular improvement or development perfected on this road during this period. We participated with other roads in the construction of the new union stations at Chicago and St. Paul. We constructed a large freight yard at St. Paul, and acquired under a 999-year lease the Chicago, Terre Haute & Southeastern Railway, which gave us a direct connection with the coal fields of Southern Indiana, ensuring a reliable and uninterrupted supply of fuel, a most necessary and important factor in the efficient operation of any large steam railroad.

In the early part of the period under review we acquired some heavy electric motors for use on the electrified section of our line, also a number of medium heavy steam freight locomotives. We are just now receiving a number of heavy steam passenger locomotives, and are about to place an order for some heavy high-speed freight locomotives.

Big Increase in Air Mail

In conjunction with 130 cities in 36 states, San Francisco has increased its air mail so that the poundage carried by all the United States air mail lines this year will equal 4000 tons or 320,000,000 letters, contrasted with 140,000,000 letters in 1928, according to a recent estimate of the Boeing System which operates the San Francisco-Oakland-Chicago and Los Angeles-Seattle air mail, express and passenger lines.

The total mileage which mail planes in the United States will fly this year, it is estimated, will be in excess of 13,000,000 contrasted with 6,670,000 miles last year. Improved service, expansion of the air mail network, double daily round-trip New York-Chicago-San Francisco service, and the growing familiarity of the general public with air mail are the reasons assigned for the increase.

He that has a trade has an office of profit and honor.—*Ben Franklin.*

A New Terminal Warehouse to Be Ready in March, the Largest Under One Roof on the Atlantic Seaboard at Jersey City.

Fast Freight, Outstanding Item

The Rock Island's Constructive Program a Costly Accomplishment

By J. E. Gorman

President, Rock Island Lines

It seems to me rather well established now that the outstanding accomplishment of our railroads since they were returned to their owners by the government in 1920, has been the greatly improved fast freight train performance. This has enabled industries to reduce the quantity of stock on hand. Prior to 1920 it was customary for these industries to have on hand the minimum of 30 days' supply of material. With the improved fast freight service they have been able to carry on their operations with the minimum of one week's supply of material, and in some minimum of 30 days' supply of material. This results in a larger working capital always available for industries and quicker turnover on capital invested.

Next in importance is the improved condition of equipment. The Rock Island, as well as all important roads, has greatly improved its equipment conditions since 1920, by retiring its old wooden freight equipment, and purchasing modern steel and steel underframe equipment, and also by the purchase of heavier locomotive power.

Improved passenger train performance has been emphasized. Notwithstanding the inroads made by bus operation, railroads have continued to improve their through passenger train performance by providing modern all steel equipment and reducing the running time between practically all the larger centers.

During the past ten years the Rock Island has made a yearly expenditure for improvements on its lines of $90,139,418. It has maintained dependable, on-time, fast freight service, and in many instances has reduced the running time and deliveries of such service. It has retired about 10,000 wooden freight cars; has retired approximately 250 small locomotives; it has purchased 169 new freight locomotives and 60 passenger locomotives and 11,640 new all-steel or steel underframe freight cars. The public has taken advantage of these new facilities as reflected by increased gross ton-miles operated in 1928 as compared with 1920 of 33.2 per cent.

Car Repair Shops of the Rock Island at Blue Island, Ill., in the Chicago Territory. One of That Company's Numerous Constructive Examples of the Last Ten Years.

The Rock Island has provided many large improvements on its property in this period. For example: During the last ten years 82 miles of second main track has been constructed between Topeka and Herington, Kan., at a cost of $6,000,000. This improvement was necessary properly to handle increased traffic, and to reduce our operating expenses.

The Rock Island has installed a system of automatic train control on its line from Chicago to Des Moines, Iowa, a distance of 358 miles at a cost of $500,000.

During the last five years, we have constructed a new line between Amarillo, Texas, and Liberal, Kan., a distance of 153 miles at a cost of $7,500,000. This new line serves a vast agricultural territory as well as large oil fields.

One of the most extensive and important yard improvements has been made at Armourdale, Kan., covering construction of 88,390 feet of additional tracks with additional car capacity of 1,690 cars at a cost of about $695,000. This work was started in 1927 and will be completed in 1929. The additional facilities are necessary properly to care for increased business and to expedite movements of cars through the terminal.

At El Reno during the last two years, the Rock Island has made quite an extensive addition to its yard facilities, providing for additional capacity of 428 cars at a cost of about $250,000. These facilities are required to permit of economical operation and properly to handle increased business.

In 1929 a new freight terminal was constructed at Omaha at a cost of about $1,500,000. These facilities include a freight house 32 by 200 feet, an island platform 16 by 350 feet, automobile and machinery platform 28 by 182 feet, ten-ton electric crane. These facilities are served by tracks having a capacity of 225 cars.

New Car Shop at El Reno, Okla.

At Blue Island, Illinois, a steel and brick building 80 feet wide by 500 feet long has been built, equipped with modern machinery for handling efficiently the fabrication of steel car parts, repair and general steel freight car rebuilding work. This was erected in 1928 at a cost of about $350,000. This shop can house 20 cars undergoing repairs or in process of rebuilding, and has a maximum output of five heavy rebuilt cars daily.

This shop is in the Chicago territory, which is the eastern terminal of the railroad at the break between eastern and western railroads. It is the greatest improvement made in the car department facilities of the Rock Island in the last 25 years.

El Reno, Okla., Steel Shop. A steel and brick constructed building, 75 feet wide by 400 feet long, equipped with modern machinery the same as the Blue Island shop, was erected in 1929 at an approximate cost of $250,000. This shop can house 16 cars undergoing repairs or in process of rebuilding and has a maximum output of five heavy rebuilt cars daily. This shop in El Reno is at the intersection of the east and west and north and south line, and is equal to anything of its kind anywhere in the southwest territory.

We have carried on a constructive program in improving our locomotive power by the application of thermic syphons, boosters, stokers, feedwater heaters, and have increased the total tractive effort of power during the last ten years 7,272,087 pounds. The average tractive effort of our locomotives has increased from 32,110 pounds to 40,535 pounds, an increase of 8,425 pounds or 26.2 per cent, which has increased the average number of cars handled per train, 35.7 per cent.

The Railroads and Waterways

Speaking to the Associated Traffic Clubs of America at St. Louis, R. H. Aishton, president of the American Railway Association, said the railroads are not opposed to the development of inland waterway transportation if economically justified, but they are opposed to the federal government entering into competitive transportation operation with them. But the railroads do ask, said Mr. Aishton, that there shall be even-handed justice in the competition between the facilities of the rail carriers and inland waterway operation if the true economic situation in ths country requires the development of waterways.

"The carriers," continued Mr. Aishton, "have offered and are offering no opposition to federal expenditures for the improvements on these inland waterways. With respect to all the plans for making waterways available for traffic as an economic necessity, the railroads have expressed no opinion and have taken no position. They are placing no obstacles in the way of accomplishment along these lines although, carrying an increasingly heavy burden of taxes, they must pay a substantial portion of the expenditures, and thus have a right to be concerned in the question of the economic necessity for such expenditures.

"The railroads have steadfastly refused to be placed in a position of opposition to the development of any legitimate form of transportation service, whether over the highways, in the air or on the water, which is economically justified, that is, pays its own way and is demanded by the public.

"There are three things to which the railroads make objection, because they believe that these three things are not in accord with even-handed justice. The rail carriers are opposed on principle to the government's entering into a competitive transportation operation with them. They believe the principle that the government should not engage in business in competition with private enterprise is a part of the government policy and is approved by the business men of the country. They feel that this principle should be applied to them as well as to any other industry.

"The rail carriers are also opposed to being subjected to a competition wherein the competitor is relieved from important items of operating costs which the rail carriers and every other private enterprise must meet out of revenue. I refer here specifically to the fact that the government operation through the Inland Waterways Corporation not only has its highways made available and maintained for it, but also it operates without any requirement to pay taxes such as are assessed upon private enterprise, or to pay interest upon the capital which has been given it by the government. This is an element of unfair competition."

Engine 859
A feature of the World's Columbian Exposition Baltimore and Ohio exhibit, Chicago 1893, and still available for service.

The Union Station at Chicago, a Development of the Last Decade.

Notable Increase in Tractive Power

Modern Engines With Economy-Efficiency Devices On the Burlington

By F. E. Williamson

President, C. B. & Q. R. R.

STEAM transportation has advanced most notably, I believe, in the last ten years, in increased freight operating efficiency. By this I mean the actual speed of transportation and delivery of shipments as well as the greater accomplishment by railroads in moving net ton miles per unit of expenditure. This involves a good many features of the operating performance, all of which I believe may be grouped together as the outstanding feature of transportation since 1920. Figures in support of this viewpoint will be found in this communication.

During the period since 1920, the Burlington Railroad has expended a net amount after retirements, of approximately 112 million dollars on additions and improvements to the property, chargeable to capital account. Extensive improvements were made to yards and terminals at Chicago and elsewhere during the period, considerable portions of the line double-tracked and block-signalled; passenger and freight stations built, extensive grade revisions and other improvements were completed, equipment modernized and added to. Our locomotive shop at Denver was completed during this period, also the Chicago Union Station. The cost of the station is not included in Burlington's direct expenditures for improvements, quoted above.

Motive power has improved during this period to a greater extent than in any previous ten years in the history of railroad operations. In size alone, the development has been rapid as indicated by the figures on average tractive power of locomotives owned. Small engines have been retired, and power added has been of large size. Modern devices such as superheaters, mechanical stokers, feedwater heaters, fire brick arches, etc., have been added to practically all of the existing engines, and incorporated in the specifications for new power. The 2-10-4 type freight locomotive illustrated here has a tractive effort of 90,000 pounds, and can handle a train weighing 8,000 tons.

The Burlington's gain since 1920 in various freight operating averages that indicate the gain in efficiency, and the expediting of our service to the public, is indicated on next page.

In addition to mechanical advancements and construction improvements, the Burlington has done much to create and maintain pleasant relationship with the public as the years

The Burlington's Locomotive Shops at Denver.

have gone by. This has been done, as in the case of other Class 1 roads, through proper channels open to every large industry whose operation involves the comfort, the convenience, and the business prosperity of the people in its territory.

We now come to the table disclosing the Burlington's operating progress:

TEN YEARS OF IMPROVING OPERATIONS

	Average Miles Per Car Day	Net Ton Miles Per Train Hour	Gross Ton Miles Per Train Hour	Aver. Tractive Power of all Locomotives Owned
1920	32.1	8,250	16,897	34,500
1921	29.2	8,861	18,944	34,900
1922	30.7	8,644	18,442	35,494
1923	34.0	8,881	19,236	36,140
1924	31.4	9,209	20,239	36,249
1925	32.6	9,851	21,685	37,021
1926	36.0	10,162	22,574	37,984
1927	34.0	10,136	22,691	39,695
1928	36.6	11,176	24,663	41,060
10 Mos. 1929	38.0	11,334	25,088	42,300

This Line Shows Fine Improvement

By A. E. Clift

Prest. Central of Georgia

Since 1920 the Central of Georgia Railway Co. has increased its investment in road and equipment approximately $25,000,000, of which approximately $12,000,000 was in equipment. Our records show an increase in gross ton miles per train mile of 292, and in net ton miles per train mile of 61. Our net ton miles per car day increased 74, and our average miles per car day 8.9.

Probably our most important improvement has been the reconstruction and grade revision on our Birmingham district, between Birmingham, Ala., and Columbus, Ga., covering 135 miles. This has resulted in shortening the line approximately five miles, eliminating 40 highway grade crossings, two railway grade crossings, 89 curves, and replacing 2426 feet of wooden trestles with concrete and steel structures. The cost of this work was about $7,000,000.

The net increase in number of our locomotives in service is 30. Average tractive effort increased from 34,193 to 40,310.

The most notable advance in steam transportation since the return of the railroads to their owners in 1920, in my opinion, has been the rehabilitation of facilities, the addition of equipment, the restoration of employe morale, and the elimination of car shortages, resulting in improved service that is satisfactory to the public.

Getting Even With the Passenger Department

Death journeys are going to be made more attractive for hogs. Triple-decked steel stock cars which do not have to unload en route for feed and water are being tested on runs between Chicago and the West Coast. They carry two water tanks of five-barrel capacity each, with hose attachment for filling troughs along the sides of the car. Two tons of dry feed are carried.

Each car has an attendant who lives in a compartment at the end of the aisle. He is the porter for the "pig Pullman," feeding and bedding them in winter.

The cars are expected to save four days' time coming from the coast and are approved by the National Humane Society.

A mere copier of nature cannot produce anything great.—*Reynolds.*

One of the Burlington's 2-10-4 Type Freight Engines; Tractive Effort 90,000 Lbs. It Can Pull An 8,000 Ton Train.

When the Public Knows the Facts

How 10 Years' Advertising Created Good Will. An Optimist at Large

By L. A. Downs

President, Illinois Central System

REVIEWING the railway progress of the last decade, I am impressed with the paramount influence of one contributory factor in particular. That is the great change in the public's attitude toward the railroads. Suspicion and distrust of the railroads have virtually disappeared, and in their place has grown up a spirit of friendly understanding and good will that is constantly gaining in strength. All the advances made in the field of railway transportation in this period, and they are numerous and far-reaching, are in large measure the fruits of this transformation.

The cause-and-effect relationship is easy to demonstrate. The railroads, more than any other industry, depend for their welfare upon favorable public sentiment. They can exist only by virtue of public patronage. They are at the mercy of the public in the matter of laws. Virtually every important matter of railway finance, administration and operation is subject to the supervision and control of public authorities. Thus, the attitude of the public toward the railroads decides their fate. Enjoying the good will of the public, they can thrive and grow; lacking it, they are bound to languish and wither. It follows, therefore, that the remarkable achievements of the railroads since 1920 must be credited primarily to public helpfulness in the way of friendship and cooperation. Otherwise their achievements would not have been possible.

This friendly public spirit toward the railroads is a tremendous stimulus to railway initiative. Under its inspiring influence, railway service has been improved in the last decade to a point closely approaching perfection. The transportation shortages that used to occur periodically, strangling business and entailing losses to the country running into hundreds of millions of dollars, have become things of the past. Shippers nowadays can count on having plenty of cars when and where needed, and on speedy movement of their shipments to destination. Schedules have been shortened everywhere, in many cases to an extent measurable in days, and on-time arrivals have come to be accepted as a matter of course. Never before has this or any other country enjoyed such superior service. Ranking government authorities and business leaders in all lines have paid glowing tributes to the worth of this service as a national economic asset. The railroads continue striving diligently to make their service even better by way of showing their appreciation of public friendliness and their desire to merit its further enjoyment.

—Chicago Aerial Survey

An Aerial View of Markham Yards, a Part of the Illinois Central's System of Its Chicago Terminal Electrification and Improvement Project.

GOLD

FIFTY YEARS OF

in 1879

"GOOD AS GOLD"

STEAM Railway men of the 70' were skeptical when Edward E. Gold suggested a new and better method of heating passenger coaches. Small wood-burning stoves were the accepted method. But stoves left much to be desired from the standpoint of passengers' comfort. The temperature near the stoves imitated the tropics at midday—while unfortunate travelers in the center of the car almost froze.

There was an even graver objection to the use of stoves. In the event of a wreck the stoves tipped over and the flimsy wooden cars of that day promptly caught fire, adding to the horror of the accident. These considerations prompted a trial of Gold's invention.

It was a success, and railways installed the new Gold heating apparatus.

GOLD

PROGRESSIVENESS

and fifty years later

In 1930 In the more than 50 years that have elapsed since that day the Gold Car Heating & Lighting Company has introduced improvement after improvement. Gold's first heater established a mechanical supremacy which never has been successfully challenged. Gold heating equipment is standard today for the best in car heating devices for both steam and electric lines.

Every step in the development of heating specialties has been the result of lengthy experiment and research. In consequence Gold equipment is perfectly adapted to the exacting demands of car construction and railway operating conditions.

As each new type of Gold equipment was introduced it quickly proved itself practical and superior.

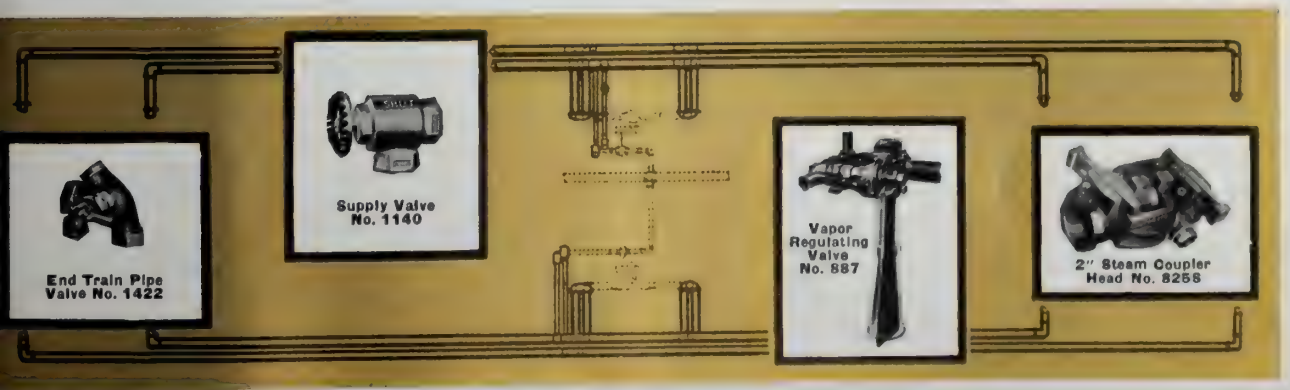
Today, Gold heating apparatus again represents an advance in the science of providing an ample volume of uniform heat to every car—at an economical price.

The Gold Catalog enters into detail regarding the perfection, convenience and economy of Gold equipment. Executives responsible for the specification or purchase of heating equipment should have a copy. Upon receipt of your name we will gladly send it.

GOLD CAR HEATING & LIGHTING COMPANY

Bush Terminal Building No. 2 — 220 36th Street, Brooklyn, N. Y.

In the United Kingdom: LAYCOCK ENGINEERING COMPANY, *Ltd.*, Victoria Works, Millhouses Sta., Sheffield
In Canada: CANADIAN GOLD CAR HEATING & LIGHTING CO., *Ltd.*, 728 St. James Street, Montreal
In the Orient: CHINESE ENGINEERING & DEVELOPMENT CO., 18 Ermanno Carlotto, Tientsin, China



The railroads are on their mettle to show what they can do with the backing of the public. Their goal is to provide service meeting the highest standards of perfection, and they will be satisfied with nothing short of that. What they have accomplished since 1920 is an earnest of their eagerness and ability to succeed in the task they have set themselves. One requisite for future railway achievements matching those of the last decade is continuance by the public of its friendly helpful spirit toward the railroads. The benefits which have accrued to the public from the improvements in railway service thus far effected ought to insure such continuance.

The Illinois Central System prides itself upon what it has done to foster this spirit. It has given proof of its earnest desire to further mutual understanding, confidence and friendship between the public and the railroads. In September, 1920, the Illinois Central System began a series of monthly statements to the public discussing railway topics of current interest. These statements are published as paid advertisements in all newspapers along the system. Their object is to take the mystery out of railroading by giving the public, in simple, straightforward messages, the facts about the aims, problems, needs and accomplishments of the Illinois Central System and the railroads in general. Every statement contains a cordial invitation for constructive criticism and suggestions. Statements in this series have appeared on the first of every month, without a break, since they were started more than nine years ago, and that is believed to be a record for duration and continuity of advertising of this kind. They are motivated by a firm conviction that the American people are essentially fairminded, and can be relied upon for just, sympathetic treatment when in possession of the facts.

The Illinois Central System has no secrets from the public. It takes the people of its territory into its confidence, tells them what it is doing, and invites them to enter into partnership with it for the advancement of mutual interests. It strives to be regarded by them as a friendly, neighborly railroad, and it does its utmost to live up to the duties and responsibilities of a good neighbor and fellow citizen. Its constant aim is to increase its usefulness to the people it serves, not only as an agency of transportation but also as a force for community progress and prosperity. It seeks to help its community neighbors carry on their economic activities to better advantage, furnishing the services of agricultural and industrial experts to this end.

Electric Suburban Train, Power Wires and Catenary Supports, in the Illinois Central System, Chicago.

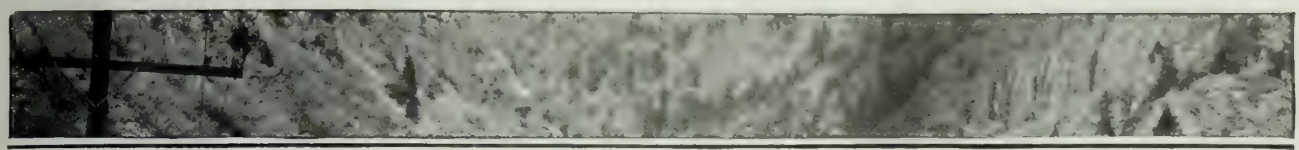
Courtesy also is a watchword of the railroad, and all members of the Illinois Central organization are thoroughly imbued with the principle that one of their first duties is to be courteous to the public at all times.

In these and many other ways, the Illinois Central System actively seeks to strengthen the ties of understanding and friendship between the public and itself. In so doing, it contributes materially to the promotion of good feeling on the part of the public toward the railroads as a whole.

The Illinois Central System also has been energetic in the improvement and expansion of its facilities. Its expenditures for additions and betterments of all kinds in the decade just ended aggregate around $262,000,000, of which $160,000,000 went into roadway and structures and $102,000,000 into needed equipment.

Among the principal activities in adding to and improving its roadway and structures are the electrification of its Chicago terminal, including the substitution of electric for steam suburban service, and provision for substituting electric for steam locomotives in handling freight operations in downtown Chicago by February, 1930, the elimination of all railway and highway crossings on the main line for the first 38 miles south of the Chicago River, and the construction of an immense classification yard, engine terminal and shop plant on the outskirts of the city; the construction of a new, low-grade line, 169 miles long and 22 miles shorter than the old line, between Edgewood, Ill., and Fulton, Ky., with the necessary yards, engine terminals and mechanical facilities; the construction of a new line, 38 miles long, between Dawson Springs and Central City, Ky.; the construction of comprehensive shop facilities at Paducah, Ky.; extensive grade-reduction projects at Monee and Paxton, Ill., and track-elevation projects at Champaign, Ill., Jackson, Miss., and Clarksdale, Miss., the re-arrangement and enlargement of yard facilities at East St. Louis, Ill., and the installation of a second main track between East St. Louis and Pinckneyville, Ill., a distance of 45 miles.

Along with these activities, there has been notable increase in the efficiency and tractive power of locomotive units. Approximately one-third of the locomotives owned by the system at the beginning of 1920 have been retired, and more than 500 new locomotives of larger and more efficient types have been installed. Meantime there has been in effect a regular program of modernizing locomotives, including the installation of superheat, feedwater heaters, improved valve gears and thermic syphons. The aggregate result is a substantial advancement in both the efficiency of performance and the total tractive capacity of the system's motive power.



LONGER–HEAVIER–FASTER TRAINS

IMPROVED condition of track, resulting from modern methods of track maintenance, is one of the prime factors enabling the safe operation of power units of sufficient capacity to handle the longer, heavier trains necessary to take care of increasing freight business. Faster movement of heavy trains materially increases the capacity of the railway plant and is an important contribution toward the betterment of railway earnings.

The Oxweld Railroad Service Company, by supplying the oxwelding needs of a majority of the Class 1 railroads of the country is helping in the constant improvement of maintenance methods.

THE OXWELD RAILROAD SERVICE CO.
Unit of Union Carbide and Carbon Corporation
UCC

NEW YORK CITY
Carbide and Carbon Bldg.

CHICAGO
Carbide and Carbon Bldg.

Saving Millions in the Railroad Coal Bill

By

F. W. De Guire

Executive Assistant

Gigantic Stripping Shovel at the Northern Pacifies Coal Mine at Colstrip, Montana.

LIKE OTHER northwestern lines, the Northern Pacific Railway Co., has made an exemplary showing in its economy and efficiency program. Probably most striking is what this railroad has accomplished with its motive power. It has established and opened probably the most unusual and most modern coal mine in the world; reconstructed a great number of its locomotives to burn the semi-bituminous coal mined at this mine; greatly reduced the number of locomotives required for operation of the system; materially increased the tractive effort of the locomotives, and effected enormous savings in its fuel bill.

The Northern Pacific coal mine is in Southeastern Montana. An unlimited amount of coal is available in a vein 28 feet thick. The operation is open-pit coal mining. The machinery, electrically operated, strips an average of one and one-half cubic yards of earth for one ton of coal. The layer of earth above the coal when removed exposes the coal vein. A gigantic coal shovel loads the coal directly upon cars drawn into the mine by electric locomotives.

The mine was opened seven years ago when the railway contracted with Foley Brothers, Inc., of St. Paul for the removal of the coal. Work now is being carried on in the first pit, and a second pit is being constructed. The first pit is one and one-half miles long and about 900 feet wide. A new contract has been entered into by the railway company with the contracting firm for opening the second pit, which will be more than two miles long, containing about 11,000,000 tons of coal. It is estimated this will be sufficient to meet the requirements of the railway for this class of fuel for the next eight years.

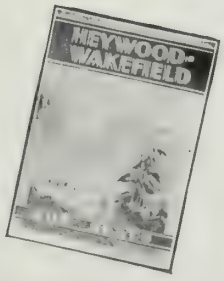
Award of the new contract called for purchase of gigantic new equipment, including the largest electric shovels in existence. One of these machines, used for stripping the earth from the coal vein, in one operation requiring less than a minute, can gnaw a hole in the ground large enough to serve as a cellar for a house, deposit the 15 tons of earth a full city block away, and, if desired, carry it to a height equivalent to the top of a 10-story building. The dipper of this shovel would make a roomy garage for an average automobile. To carry this new stripping shovel to the coal mine from the manufacturer required an entire trainload. A new coal loader, which loads coal directly from the mine, has a 68-foot boom, a 48-foot dipper stick, and an 8-cubic yard coal dipper. This shovel will load eight tons of coal with each swing of the dipper, and its capacity in a 10-hour shift will exceed 5,000 tons.

The semi-bituminous coal obtained from this mine has a steam heating value fully 80 per cent of the soft coal normally burned by railroads. The problem of the railway company, before the mine was opened, became a mechanical one. It was proved that the coal could be burned successfully in the locomotives by reconstruction of locomotive fireboxes. Gradually the volume of coal required by the railway company from this mine has been increased since the opening of operations at Colstrip, Mont., until today locomotives in the territory between Spokane, Wash., and Jamestown, N. D., are burning this fuel.

The largest steam locomotive in the world now is burning this kind of coal. The enormous proportions of the Northern Pacific's Yellowstone type of freight locomotive, operating betweene Glendive, Mont., and Mandan, N. D., are attributed largely to the great dimensions of its firebox. This, including the combustion chamber, is 28 feet 6 inches long by 9 feet 6 inches wide; the grate is 19 feet 2 inches long by 9 feet 6 inches wide, making a total of 182 square feet of grate area. It has a mechanical stoker of special design capable of crushing, delivering and distributing to the firebox hourly a maximum of 45,000 pounds or 22½ tons.

A De Luxe Reclining Chair!

The 155-P is one of the most luxurious and comfortable reclining bus chairs ever produced. As shown above, in a smart upholstery combination of leather and plush, this modern seat offers long, satisfying wear, as well as a distinctive appearance. Both the cushion and back on this style are designed and pitched for restful comfort. The soft, spring-filled back is concave and has a pillow-type headroll. The back may be reclined to three positions by pressure on the handily located lever at the side of the chair. Write to the nearest Heywood-Wakefield sales office for complete details of the 155-P and other popular bus seats in our line.



If you have not received a copy of our new Bus Seat Catalogue, write for it.

HEYWOOD - WAKEFIELD COMPANY

BOSTON, MASSACHUSETTS

516 West 34th St., New York City
J. R. Hayward, Liberty Trust Bldg., Roanoke, Va.
H. G. Cook, Hobart Bldg., San Francisco, Calif.

439 Railway Exchange Bldg., Chicago, Ill.
A. W. Arlin, Delta Bldg., Los Angeles, Calif.
The G. F. Cotter Supply Co., Houston, Texas

The Railway and Power Engineering Corporation
133 Eastern Ave., Toronto; Montreal; Winnipeg, Canada

The Largest Steam Locomotive in the World. It Weighs 1,116,000 Pounds. Eleven More Have Been Ordered.

The locomotive was built as an experiment to operate over a 216-mile stretch where there is an undulating grade line, with controlling grades of one per cent so separated over the territory that it had been impracticable to establish helper or pusher districts. The locomotive is 125 feet long overall, riding the rails on 34 wheels, including 12 on the tender. The locomotive weighs 1,116,000 pounds. The railway company recently awarded a contract involving approximately $2,000,000 for construction of 11 more of these mammoth engines.

The records of the operating department show that in 1922 the company owned 1,441 engines with an average tractive effort of 38,143 pounds each. Between 1922 and 1929 the company purchased a substantial number of large locomotives which enabled it to displace and dismantle the smaller engines, so that within this period, the number of engines owned was reduced from 1,441 to 1,099. The tractive effort of these 1,099 locomotives was 41,244 pounds.

Operating department officials of the railway company said that the open-pit source of coal supply from the Colstrip mine was largely responsible for decreasing the Northern Pacific coal bill from $10,233,708 in 1923 to $6,113,721 in 1929.

Fine Record in a Brief Report

By A. G. Wells
Vice-Prest., A. T. & S. F.

The Santa Fe probably is no different from most other big railways. In its early days its expenditures and activities were greatly restricted by lack of funds, hence much of its construction was of necessity "cut according to its cloth." To future generations was left the task of bringing about those additions and betterments so necessary in providing adequate service to the public.

Generally speaking, the average reader does not relish an array of figures running into the millions. Those shown here, however, are unavoidable. They outline in a general way what has been done during the last ten years toward providing that efficient and economical operation enjoined upon us by the Transportation Act:

On January 1, 1920, we were operating 11,483.12 miles of railway as compared with 13,167.56 at present.

We have bought 352 locomotives, of which 259 were freight and 93 passenger, the tractive effort of the former having increased nearly 20 per cent.

A total of 35,700 freight cars and 435 passenger cars, all of the highest type of construction, have been bought in the decade.

The company has built 468 miles of second main track. The standard weight of rail for main lines has been increased from 90 to 110-pounds, and a program established looking toward the yearly changing out of a certain percentage of lighter rail.

In compliance with the Interstate Commerce Commission's order, 175 miles of automatic train control has been installed, costing more than $10,000 a mile.

We have built some 625 miles of lines and have under construction 154 miles additional, much of which taps new territory.

During this period there has been acquired a total of 1100 miles of railway, part of which consists of what is familiarly known as "The Orient."

During this 10-year period we have installed something over 3,000 miles of automatic signals.

In addition, a great deal has been accomplished in the separation of grades, changes of line to reduce grades and curvature, widening cuts, lengthening passing tracks, placing crushed rock ballast, and the building of new bridges and the strengthening of old ones; also the enlargement of terminal yards.

Continued improvement of freight and passenger train schedules; one of the innovations in the latter being the establishing of "The Chief," "Extra Fast—Extra Fine—Extra Fare."

New shops, office and station buildings have been erected at various points along the line, the total cost of this work running into many millions.

The average annual expenditure for additions and betterments during this period has been approximately $29,000,000.

The operating ratio during the past decade has steadily and substantially declined. In 1920 it was 85.30 while for 1928 it was 69.45 with a still further reduction for 1929.

In addition to this physical improvement, much time and thought have been given to the further development of morale among employes, the value of which cannot be computed but without which no institution can be a success. The officers of the Santa Fe from the president down have risen from the ranks, promotion from its own 65,000 to 70,000 employes being a well established principle based upon merit, ability and length of service. As a result a mighty army has been developed of loyal, enthusiastic workers who realize that their immediate superiors as well as those farther up the line "know their stuff" and will treat them with consideration and in accordance with their just deserts.

These expenditures, coupled with the close relationship existing between officers and employes, have provided for the public an improved, safe, comfortable, efficient and economical service. What has been accomplished during the past ten years may be considered an index of what may be expected during succeeding ten-year periods, namely, a sane and intelligent development of a vast property serving a growing empire and demanding the best the transportation field has to offer.

Governor Larson of New Jersey favors construction of a vehicular tunnel under the Hudson River from Weehawken, N. J., to near 38th Street, Manhattan. Cost would be about $62,000,000, which would be paid for jointly by New York and New Jersey.

Man is not the creature of circumstances—circumstances are the creatures of men.—*Disraeli.*

Spurs Won in Service

IT is fitting that an organization whose chosen work is founded on chemical analysis and research should build itself around its laboratories. That it should burst the bounds of these laboratories and find expansion necessary three times in twenty years, is tribute to the effectiveness of its work. Once again are we moved into new laboratories — and this time to more than doubled facilities and to the most perfectly appointed and greatest water laboratories in the world.

This photograph was taken very recently in the library of these new and greater Dearborn Laboratories. The group is the present laboratory staff. Compare it with the combined office and laboratory view below of 1895. The Dearborn Chemical Company takes pride in this material indication of its accomplishment as also do its thousands of friends.

As a house of chemical engineers, which is constantly expanding, in service to industry, the senior executives and many of the men throughout the entire organization are graduate chemists and engineers. Also, many of our service men have been educated as chemists and have done their turn in the Dearborn Laboratories.

The laboratory staff devotes its time principally to water analysis and research. The men have come to us from the Armour Institute, The Universities of Wyoming, Illinois, Ohio State, Oregon, Chicago, Mississippi, Iowa, Purdue and many other schools of high rating.

Such an array of trained men represents the freshest, keenest viewpoints in chemistry and engineering. Two of these men spend all their time in research, independent of problems of the day, studying reactions and making suggestion and improvement where possible. The men in the laboratory are guided by our older scientists who have been seasoned in service to the customers of this company for many years.

It is such a group to whom your water problems are submitted, whether the trouble be scaling, foaming, pitting or corrosion. It is such a group working in the Dearborn Laboratories who are contributing their part to the greater prestige of the name "Dearborn".

Realize that the Dearborn Service man represents all the experience, the keen insight and the scientific exactness which this organization can command—that he talks for these men and has constant contact with their findings and experiences.

If you are not now using Dearborn Service, write us and let us discuss Dearborn results with you.

Dearborn Chemical Company

Chicago **Los Angeles** **San Francisco** **New York**

Prompt, Dependable Service Now

The C. & N. W. Enlarged Motive Power and Proviso Yards Important Developments

By Fred W. Sargent

President, C. & N. W. Ry. Co.

DURING the last nine years, the outstanding achievement of railroads has been the development of prompt and reliable service. This has contributed to the success of every enterprise in the nation.

"Hand to mouth" buying, reduction of inventories, and mass production have been large factors in the nation's prosperity, factors which would be impossible without prompt and dependable railroad service.

The North Western's latest contribution to the progressive trend in transportation, is the Proviso yard and freight house, situated just west of Chicago. This $16,000,000 project for the handling of through traffic with the utmost efficiency has provided for the tremendous growth of Chicago and its improvements as a transportation center and railroad terminal.

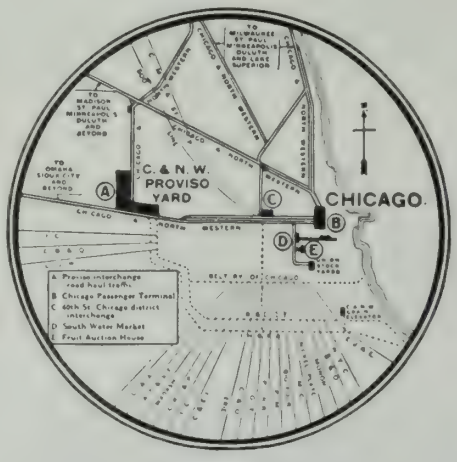
The immensity of the improvement can be perhaps better visualized by the following facts:

Total area .....1,250 acres
Track capacity .....26,000 cars
Through cars, per day ..15,000 cars

The Proviso transfer house for less than carload freight contains:

Area under one roof .....21 acres
Length .....1,420 feet
Width .....720 feet
Merchandise cars, daily cap. 700 cars

A passenger station has also been built adjacent to the office building at Proviso for the convenience of patrons. We also have constructed a fine modern icing plant for perishable freight. Modern buildings and equipment of all kinds to facilitate and expedite operations.



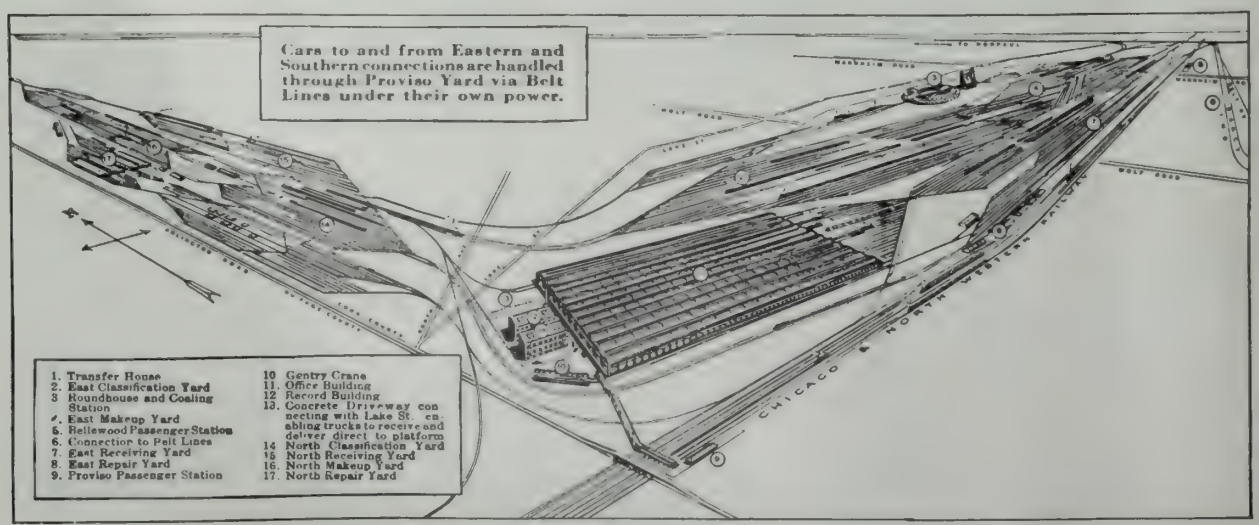
The Proviso yard is particularly well situated to serve the East, West, North and South as departing and arriving trains over the Chicago & North Western Railway move directly to destinations without necessity of passing through the city of Chicago.

In addition, the following Belt Lines deliver and receive freight at Proviso Yard under their own power, insuring continuous movement and expeditious handling of all traffic: Indiana Harbor Belt R. R., Belt Ry. Company of Chicago, Baltimore & Ohio Chicago Terminal R. R.

An electrically operated hump and classification yard installed at a cost of approximately $750,000 and having the largest car capacity of any yard of its kind in the world is provided for shippers by the Chicago & North Western Railway at Proviso.

It eliminates the old method of flat switching and substitutes a process that distributes and classifies the cars in single operation on 59 tracks in the hump yard. The track capacity is 3,200 cars. The daily classification capacity is 4,000 cars.

By means of the new hump yard, in-coming trains can be pushed over

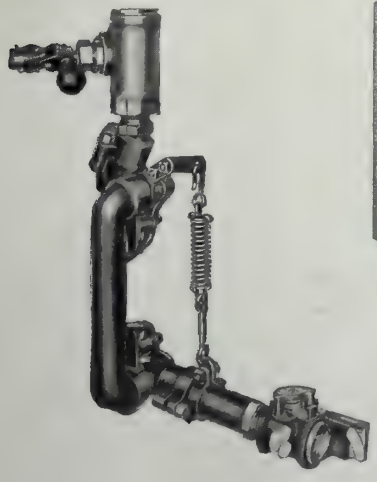

Cars to and from Eastern and Southern connections are handled through Proviso Yard via Belt Lines under their own power.
1. Transfer House
2. East Classification Yard
3. Roundhouse and Coaling Station
4. East Makeup Yard
5. Bellewood Passenger Station
6. Connection to Belt Lines
7. East Receiving Yard
8. East Repair Yard
9. Proviso Passenger Station
10. Gantry Crane
11. Office Building
12. Record Building
13. Concrete Driveway connecting with Lake St. enabling trucks to receive and deliver direct to platform
14. North Classification Yard
15. North Receiving Yard
16. North Makeup Yard
17. North Repair Yard
CHICAGO & NORTH WESTERN RAILWAY

ONE STEP AHEAD

"TO keep abreast of the times, you have to keep ahead of the times."

The Vapor Car Heating Company has recognized this fact, anticipated the advent of longer trains of steel cars, and has designed, developed and is marketing car heating equipment to meet the requirements of modern improved service.

No. 1700 Thermostat



LOCOMOTIVE EQUIPMENT { No. 208 Stop Valve. / No. 238 Reducing Valve.
—Provides sufficient volume of steam delivery from locomotive.

TRAIN LINE CONNECTIONS { No. 1106 End Valve. / No. 1136 Flexible Metallic Conduit. / No. 310 Steam Coupler.
—All 2″ throughout—unrestricted steam supply to last car.

CAR HEATING SPECIALTIES { Fin Radiation. / Unit Control—automatic.
—70° in train service; 50° maintained in yards.

VAPOR CAR HEATING CO., INC.

RAILWAY EXCHANGE CHICAGO, ILLINOIS

VAPOR SYSTEM

Vapor Company's Flexible Metallic Conduit Insures Adequate Steam Supply To The Last Car Of The Longest Train

One of the Erie's New Modern Freight Locomotives.

the hump, the cars cut off and classified into new trains, and started on their way with a saving of time in operation and an increase in the number of cars that can be handled daily.

A new stock yards, at West Chicago, representing an investment of a quarter of a million dollars in land and an equal amount in construction costs is in daily operation. It will replace the present yards at La Fox, Illinois, and will eliminate the necessity of unloading cattle and hogs at Clinton, Iowa, for feeding purposes.

The new yards will speed the arrival of western stock at the Union Stock Yards in Chicago or the transfer to eastern points over the belt lines by almost a day. There are 15 covered unloading chutes in one building, leading to 16 hog pens and 16 cattle pens. The chutes are so constructed that both decks of a double-decked stock car can be unloaded or reloaded at the same time. Sixty cars can be unloaded in one hour, or at the rate of one a minute. Four barns, 400 feet long and 126 feet wide, capable of handling 40,000 sheep, are being constructed and one is now in service.

Our latest improvement in motive power consists in the purchase of 35 improved type of locomotives, and their installation in November of this year. These locomotives are nearly twice as massive as any now in service. As these engines, called Class H, were fully described in *Transportation* a month or two ago it is enough to say now that they are capable of a speed of 85 miles an hour, and with a pulling power 50 per cent greater than the present locomotives, can haul a mile long freight train. They are equipped with automatic train control. Their immense and flexible power insures smooth starting and easier handling of trains, insuring exceptional comfort to the passenger and faster handling of freight.

The North Western is the original "Safety First" railroad of America. In furtherance of our policy, our line has been equipped between Chicago and Council Bluffs with the latest and most modern automatic train control equipment device which should insure safety to our passengers so far as it is humanly possible to do so.

Erie Spent 70 Millions

By C. E. Denney
Pres., The Erie R. R.

The most notable advance in steam transportation for the nation at large since return of the railroads to their owners in 1920 has been the rehabilitation and improvement of railroad property and the improved morale of employes.

The Erie Railroad has expended approximately $70,000,000 during the period 1921 to 1928 inclusive for additions and betterments.

The road has added 289 and retired 643 locomotives of obsolete type or unfit for economical service. Increase in average tractive power of locomotives 21 per cent.

Advance on the Norfolk & Western

By A. C. Needles
Prest., N. & W. Ry.

The most notable advance in steam transportation since the return of the railroads to the owners in 1920 is obviously the efficiency with which they have handled an unprecedented volume of traffic. The Norfolk & Western Railway has, in common with other carriers, improved and enlarged its facilities, speeded the movement and handling of traffic, and increased the efficiency of its organization. An illustration of this effort constantly to improve our service is the building, in recent years, of new terminals at Williamson, W. Va., and Portsmouth, Ohio, at a combined cost of more than $12,000,000.

With better facilities and equipment, improved morale and effective cooperation from shippers and receivers of freight, we have been able to render a service that has contributed much toward the development and success of industry and agriculture in the territory served by the Norfolk & Western.

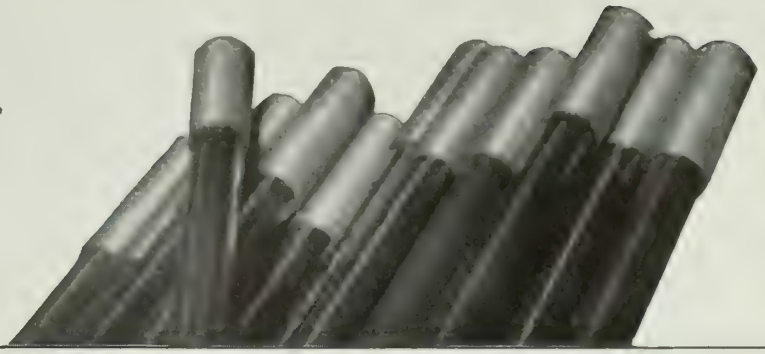
"It's amazing how much time and effort people will put into their business and how little of themselves they will invest into the business of happiness."—*Bertrand Russell.*

"The 'wisher' gets nowhere. The 'wanter' makes his wish come true by working for it."—*Knute Rockne.*

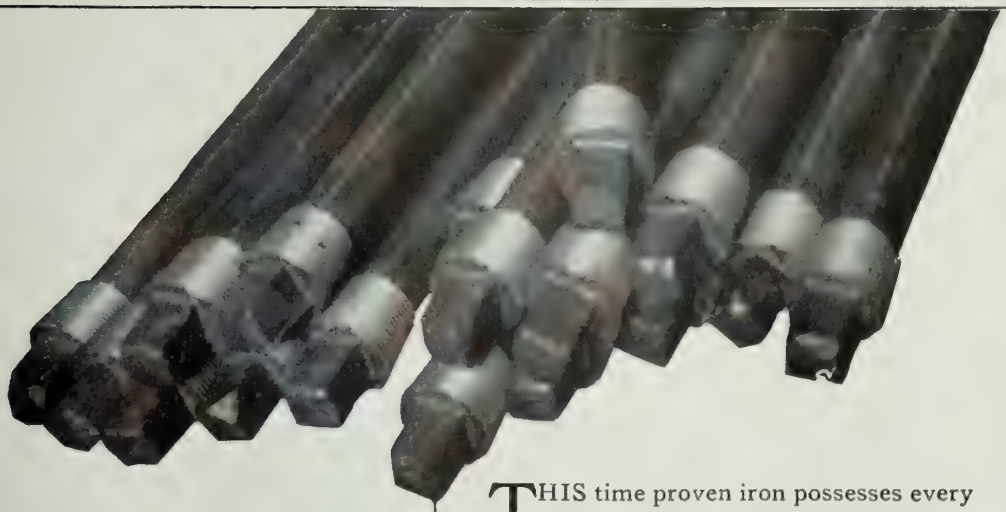
Photo, Rothschild.

The Erie's New Pier, One of the Finest in New York Harbor.

"In Use Since 1844"



TENNESSEE CHARCOAL BLOOM STAYBOLT IRON



THIS time proven iron possesses every characteristic essential to perfect staybolt performance. It consistently delivers maximum efficiency at minimum maintenance.

Soft, ductile and tough, it is uniform and unvarying in its high quality and conclusively demonstrates that in the end the best staybolt iron is always the cheapest.

A thorough service trial will be convincing.

EWALD IRON COMPANY

LOUISVILLE

CHICAGO NEW YORK ST. PAUL

In Ten Years 200 Millions Spent

Bigger and Better Motive Power On the Louisville & Nashville

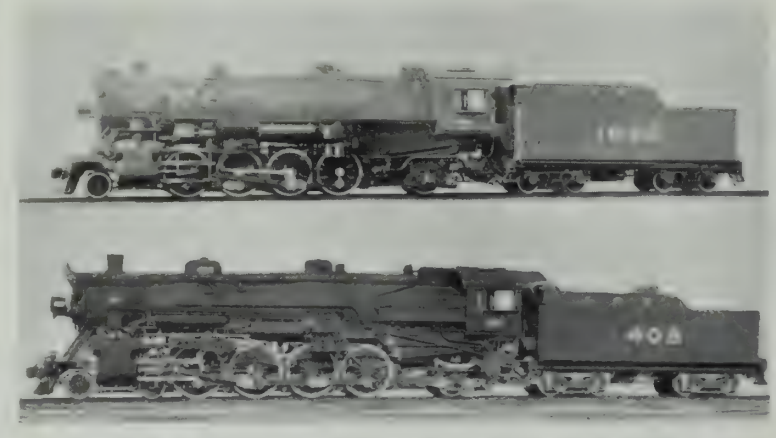
By W. R. Cole

President, Louisville & Nashville

AMERICAN railroads have achieved such a remarkable comeback in every part of their activity since they were returned to their owners a decade ago, following federal control, that it is virtually impossible to place the brand of superlative excellence on any single feature of their accomplishment. However, from the viewpoint of the beneficial economic results obtained, both for the railroads themselves and as a contribution to the country's industrial prosperity, I think the most notable advance has been in their improved efficiency.

There have been many factors combining to elevate the plane of railroad efficiency, not the least of which has been the splendid cooperation afforded by the public, both individually and through the various Shippers' Advisory Boards established throughout the United States, as well as by the loyal support of the thousands of railroad employes who have earnestly supported the managements in their effort constantly to improve the railway service. Probably the greatest single factor underlying the improvement has been the enormous expenditure of over six billion dollars made during the past ten years in carrying out the program for physical betterment to the roadway and the rolling stock of the railway plant. Notwithstanding the fact that the return on the railway investment has been inadequate under the existing law, and in the face of increasing operating costs and higher taxes on the one hand, and reduced rates on the other, the managements have succeeded in raising and investing this tremendous amount of capital which has enabled them to improve the various factors of performance, such as the trainload, the speed of movement; to eliminate car shortage and delays, to effect economies in fuel consumption, and above all to provide a character of service that has been uniformly satisfactory to practically every user of transportation.

Through these various elements of improvement, the composite of all of which is reflected in their enhanced efficiency, naturally the advantages to the shipping public have been very substantial. I believe these advantages will continue to accrue provided the railroads are able to command the necessary credit and capital to perpetuate the existing highly efficient transportation plant, and at the same time make such necessary improvements as the constantly increasing traffic conditions require.



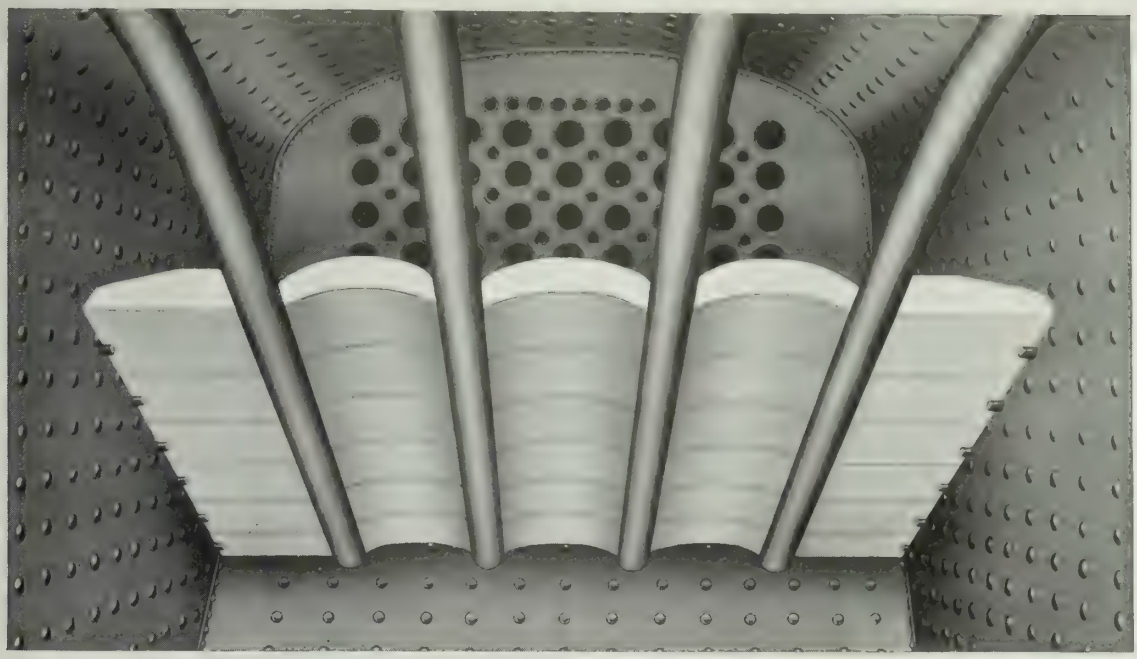
The 1892 Is One of the Louisville & Nashville's Modern Freight Engines. The 402 is a Mountain Type Locomotive. Both Are Baldwins.

Since the end of federal control the L. & N. has appropriated over $200,000,000 in the improvement of its properties. Such expenditures include the buying of modern equipment of greater power and capacity; the construction of numerous facilities, such as additional yards, additional passing tracks, and the strengthening of trestles to permit the use of heavier power and to facilitate operation. Likewise it includes the construction of approximately 160 miles of double track work on its heaviest traffic-producing divisions, as well as the construction of nearly 14 miles of line between Chevrolet, Ky., and Hagans, Va. As a result of this work both the trainload and the carload have been increased and the performance substantially expedited. Employing 1919, the year preceding the end of federal control, as a starting point, it may be of interest to state that as compared with that period the carloading at present has increased 32 per cent and the net ton miles per car day have been increased 28 per cent. Since 1922 the average train speed has been increased 23 per cent and the gross ton miles per train hour show a remarkable improvement from 12,309 tons in 1922 to 20,800 tons in September, 1929, an increase of more than 69 per cent.

The amount of improvement work included in the $200,000,000 expenditure was, of course, very extensive, but the construction of main and double tracks, the installation of heavier bridges, and the acquisition of more powerful equipment constitute the major portion.

Our locomotives have advanced considerably in weight and capacity in the last nine or ten years. In 1920 our heaviest passenger engine was of the Pacific type with 22 by 28-inch cylinder, No. 200 B. P., 69-inch diameter drivers and tractive effort of 33,400 pounds. The next of our new orders for locomotives advanced this type of engine to 25 by 28-inch cylinders, 72-inch drivers and 40,700 pounds tractive effort.

Three years later (1926) we adopted the Mountain type for our heavy passenger trains with 27 by 30-inch cylinders, 69-inch drivers and 53,900 pounds tractive effort. The



"ECONOMY" BAFFLE WALL

THE NEWEST THING in ARCHES

Represents all that the name implies.

MANUFACTURE:
Proper mixture and burning assured by years of experience.

APPLICATION:
"ECONOMY" method insures—

1. Maximum life of brick with minimum weight on arch tubes.
2. Eliminates the necessity of straightening or replacing bent arch tubes, due to wedging effect.
3. Closes the "pockets" between brick and side sheets, where slag and "honeycomb" accumulate, thus increasing the active firebox surface.
4. Provides radiant heat for more complete combustion near side sheets.

SERVICE:
Thoroughly experienced Service Engineers provided to co-operate with and instruct Mechanical Department employes in proper use, application and handling of "Economy" brick, to bring about economies in the maintenance of your locomotive arches.

Economy Arch Company

Railway Exchange Bldg. St. Louis, Mo.

Bowling Green, Ky., Passenger Station Replaced One That Had Been Used for More Than 50 Years. This One Cost $190,000.

boilers of these Mountain type locomotives contained 70.8 square feet of grate surface, and are fitted with mechanical stokers, super-heaters, force feed lubricators and power reverse gear. These locomotives are making daily continued runs between Cincinnati and Nashville, a distance of 300 miles.

We have also advanced our freight equipment in keeping with the passenger engines, applying to the last lot of 24 new Mikado engines, the latest improved feed water heaters, mechanical stokers, power reverse gear and syphons. Our freight engines are of the Mikado type, having 63,000 pounds tractive effort with 63-inch drivers, carrying 200 pounds of superheated steam.

The great improvement in the transportation performance has, of course, been to a material degree, brought about by the placing in service of modern power of greater capacity, such as described. These locomotives have also served to bring about economy in operation by reason of less consumption of coal per unit of operating performance that has been very gratifying.

Quality Transportation

The scheduling of freight trains, both carload and less than carload, on the same basis as passenger trains; the speeding up of freight through terminals; and the aggressive campaigns to reduce loss and damage claims, are some of the outstanding improvements inaugurated by the operating departments of the American railroads in an endeavor to provide the country with quality transportation service, according to J. N. Haines, superintendent of transportation, Lehigh Valley Railroad, in an address before the Traffic Club of New York.

"These scheduled freight trains," Mr. Haines explained, "are followed through by telephone and telegraph, just the same as our passenger trains, and the conductors, engineers and yardmasters account as closely for any delay to these trains as they are required to do for our passenger trains."

The Rigolets Bridge on the Mississippi Gulf Coast Rests on Circular Concrete Piers Sunk 70 Feet Below River Bed, and 122½ Feet Below Sea Level.

Discussing the "Relationship Between Railroad Operating Departments and Industrial Traffic Departments," Mr. Haines stated that after the war it was the duty of railroad men to get the roads back to a normal basis.

"In our efforts in this direction," he said, "we very soon found we must do much more than get them back to a normal basis; we must put them on a better basis than they had ever been before. Perishable freight had always received special attention and had been handled with a degree of regularity, but it was apparent to us that it was equally important that the movement of freight in general be improved.

"We decided that the best way to accomplish this was to schedule all freight trains and run them substantially on the same basis as our passenger trains, laying out in each instance the particular business to be handled in each schedule, giving them a leaving time at the initial terminal with arrival and departure time at intermediate yards, and an arrival time at destination; and, in the case of business going off the line, a fixed time for delivery to connections.

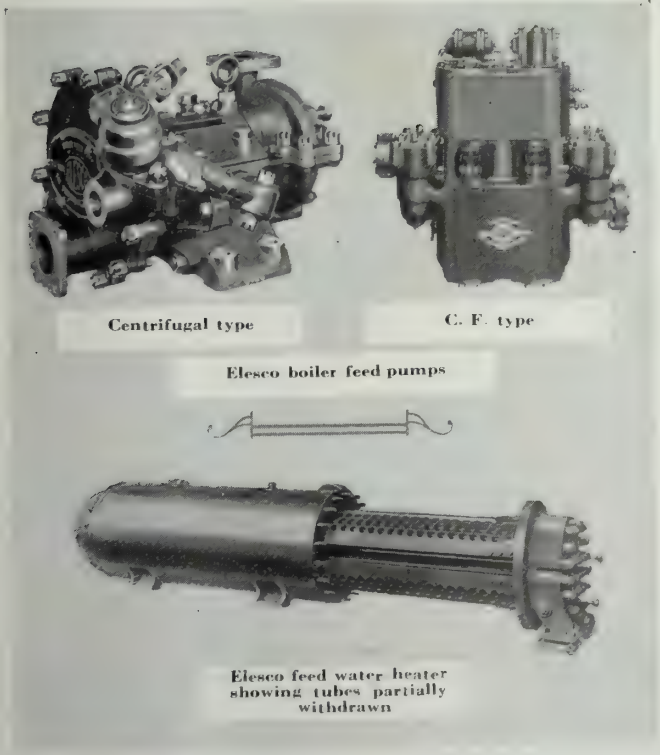
"In working out these schedules and in order to save time at intermediate terminals, trains were classified at the starting point so as to

The L. & N. Has Added to Its Shop Facilities at Mobile, Ala., a 17-Stall, 110-Foot Brick and Concrete Enginehouse With Ten Additional Radial Engine Tracks Outside.

ELESCO

—The Greatest Capacity-Increasing Factors on the Modern Locomotive

Elesco type "A" locomotive superheater



Centrifugal type

C. F. type

Elesco boiler feed pumps

Elesco feed water heater showing tubes partially withdrawn

REGARDLESS of locomotive size or class the Elesco superheater and the Elesco feed water heater together add at least 40 per cent to the sustained boiler capacity of that locomotive.

This added capacity due to Elesco makes possible the high speeds and heavy trains of modern railroad operation.

Elesco-equipped locomotives make every ton of fuel, every dollar of wages and every dollar of investment yield more in net earnings.

THE SUPERHEATER COMPANY

17 East 42nd Street
NEW YORK

Peoples Gas Building
CHICAGO

Canada: The Superheater Company, Limited, Montreal

FEED WATER HEATERS SUPERHEATERS EXHAUST STEAM INJECTORS
SUPERHEATED STEAM PYROMETERS

A-293

Eleven Story Extension to L. & N. Office Building to Cost $830,000. Ready Next Spring.

go through as many intermediate terminals as possible without switching, and many trains are got through without breakup in transit from one end of our line to the other."

Reviewing the railroads' campaign to reduce rough handling of cars on the road and in yards, Mr. Haines described the use of the "impact recorder," which, placed in a car, records each impact, the degree thereof and the time at which it occurred, thus enabling the operating officer to determine the crew which handled the car roughly and to take the necessary action.

"We made no secret of the use of this machine among our men," Mr. Haines said. "We told them frankly about the machine and what it would do. The only thing we did not tell them was in what cars or in what trains they might expect to find them. We afterward extended the use of the machine to our passenger trains and it is still in service on these trains. As an indication of what we have accomplished in the more careful and better handling of freight, our loss and damage payments are now running about one-sixth of what they were ten years ago."

Costs of Plane Operation

Figures worked out by an executive of a western aircraft company, based on 100 flying hours a year, or the equivalent of 10,000 ground miles, showed complete operation costs for an average three-place open biplane, costing about $3,000, used in business, to be less than 10 cents a mile. The plane is powered with a 90 horsepower motor. The expenses for an hour, which is equivalent to 100 miles, are figured as follows: Gasoline, $1.41; oil, $0.21; depreciation (20 per cent a year), $2.55; engine overhaul, $0.75; actual flying costs, including depreciation and engine upkeep, $4.92; insurance, $2.67; costs, including insurance, $7.59; rent of hangar, $1.80; total an hour, $9.39.

The Careful Ticket Seller

By J. O. Fry

Ticket Agent, L. & N., Montgomery

The handing out of tickets is only a small part of the duties of a ticket seller. He represents to the great traveling public the railroad by which he is employed. He is to the railroad what the man in the front line trenches is to the army, he is the point of contact between the company and the public. Every sale of a railroad ticket is a personal transaction.

Many ticket sellers make no comprehensive study of the tariffs and do not think of looking at anything but the outside covers until someone is at the counter inquiring for information. There is then a wild scramble to find the information desired, which often results in mistakes being made, not to mention delay in waiting upon the passenger and causing him to leave the office in an irritated mood with a very poor impression of its efficiency.

The secret of winning confidence at the ticket window lies in something more than promptness of service and the avoidance of errors in the issuance of tickets or making change. These are essential. The ticket seller should be so thoroughly informed regarding the goods—transportation—which he has to sell, that he can promptly give to the customer all the information he desires. He must know the leaving and arriving time of trains, special accommodations, dining car service, stop-over privileges, sleeping car accommodations, scenic places and points of interest, advantageous connections and such other matter that will show his service to the very best advantage.

Muscogee Coaling Plant, Built by L. & N. Cost $350,000. On Pensacola Bay. Handles 600 to 750 Tons of Coal an Hour.

Excavation Necessary to Eliminate a Single Track Tunnel. Cut is 4,600 Feet Long, 75 Feet High and 39 Feet Wide. Cost $1,800,000.

Bridging and Tunnelling for Double Track on Kentucky Division of L. & N.

"Anyone who firmly believes that the opportunities are all closed and that from now on the country will get worse instead of better is welcome to the opinion—and to whatever increment it will bring."—*John J. Raskob.*

REDUCE
Your Terminal Expense

2065
SLUDGE REMOVERS
installed on 26
railroads

WE will agree to double the mileage between boiler washouts, of any locomotive,* by equipping it with a Sludge Remover; with the provision that we reserve the right to refuse to so equip locomotives now operating in exceptionally good waters.

We will accept the low payment asked for the equipment and service, only after we have made good this promise.

This company is engaged primarily in the manufacture and supply of boiler chemicals for water treatment. Its activities in rendering the necessary expert service in this connection, are properly extended to cover the installation and service of the B.-A. Co. Blow-off Cocks and the B.-A. Co. Sludge Remover. These items are consistently designed to obtain one end: The promotion of Locomotive Boiler efficiency.

*We usually multiply this mileage by at least four.

THE BIRD-ARCHER COMPANY
1 EAST 42nd STREET, NEW YORK CITY

PHILADELPHIA 2nd & Bristol Sts. | CHICAGO 122 So. Michigan Ave. | ST. LOUIS Railway Exchange Bldg. | MONTREAL McGill Bldg. | WINNIPEG McIntyre Block

29 YEARS

HAVE
MADE

SESSIONS

STANDARD
NEW YORK

# of SERVICE and DEVELOPMENT

STANDARD

The LAST WORD *in*
DRAFT GEAR
PROTECTION *for Cars and Lading*

COUPLER CO.
CHICAGO

Road and Equipment Improved

Better Bridges, Heavier Rail, Creosoted Ties, Modern Facilities Now

By T. C. Powell,

President, C. & E. I. Ry. Co.

THE ADVANCE and improvement in steam transportation in the last ten years are, to some extent, the result of federal control through the realization on the part of railroad management that the World War inspired a feeling of national progress in place of the former individualistic and localized thought.

The end and aim of the railroads of this country is to furnish reliable and satisfactory transportation not only as between points on the same railroad but between all points in the United States and adjoining countries, and for export and import. The tremendous development of the export and import trade of this country unquestionably has resulted from the war, and because of our greater appreciation of the value of world-wide commerce.

In my opinion the most notable advance in steam transportation in the nation at large since 1920 has been the more efficient service the railroads have furnished to the public generally, and the more economical operation of the properties, enabling them in spite of higher labor costs and the higher costs of material to furnish this more efficient service.

Satisfactory and efficient service includes faster schedules, more accurate arrivals on schedule and the careful handling of trains so as to avoid personal injuries and damage to property. This better service and more regular deliveries have resulted in reduction in inventories in manufacturing and merchandising plants so that recessions in trade or reductions in the general scale of prices no longer have the same disastrous effect upon the stability of production.

The C. & E. I. Railway has contributed to the improvement in conditions in the last ten years through a constant betterment of its roadway and equipment. Among these may be enumerated the following items:

Chicago & Eastern Illinois Modern Yard Completed Recently at Chicago, 23rd to 29th Streets, For Perishable Freight in Refrigerators and Ventilated Cars.

A heavier standard of rail, i.e., 110 pound in place of 90 pound per yard.

Replacing light capacity bridges with heavier steel and concrete structures.

Adopting a program looking toward adequate drainage, supplemented with a ballast allotment carefully adjusted to the traffic.

Creosoted cross ties and a betterment program on tie plates, thus preserving the treated ties to a length of life not heretofore believed possible.

The replacing of obsolete types of freight cars with modern equipment designed to meet the needs of commerce, such designs being adopted only after approval by the actual shipping public.

Providing additional steel passenger cars with the most modern type of diners and other supplementary equipment.

The C. & E. I. is now well equipped with modern terminals. In the April, 1928, issue of *Transportation* there was a photograph of the new terminal at Wansford, Indiana, upon which the company has expended over half a million dollars.

A modern freight house for the handling of l.c.l. freight has been constructed in the C. & E. I. terminals at Fourteenth street, Chicago.

The C. & E. I. as one of the owners of the C. & W. I. has participated in the development of a modern yard for the handling of perishable freight in refrigerator and ventilated cars. This terminal has cost something over a million and a half dollars, and is an important addition to the facilities for handling the food for a great city. This yard is equipped with two cranes for handling heavy material and also an automobile platform and shed. It is exceptionally well located in Chicago for the delivery of all the freight for which it was designed.

In the location and development of manufacturing plants, we have as-

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Safer Brakes at Lower Costs For Your Buses If you use

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Has proved its wear-resisting qualities. Today it will insure efficient and dependable operation for your locomotives, buses and trucks.

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Modern Passenger Station of C. & E. I. at Eighth and Main Streets, Evansville, Indiana.

sisted to the extent of our ability in the arrangement of tracks for expeditious swiching, the major development of this kind on the C. & E. I. being at Evansville, Indiana. At this place we have also replaced the old-fashioned train shed with modern umbrella sheds for better accommodation of passenger traffic. This work has been completed recently.

At Chicago, the C. & E. I. is a member of the C. & W. I. and of the Belt Railway of Chicago and utilizes all the facilities of those companies. At East St. Louis, it has entered into a contract with the Mobile & Ohio Railroad for the joint use of the modern freight house of that railroad, thus giving the people of East St. Louis a service that they did not enjoy prior to that arrangement.

At St. Louis, East St. Louis and other industrial points, the St. Louis manufacturing and merchandising districts, the C. & E. I. has the benefit of all the resources and facilities of the Terminal Railroad Association of St. Louis, being a member and stockholder of that association.

At Chicago Heights, an industrial community about 25 miles south of the Dearborn station in Chicago, the C. & E. I. has acquired the stock of the Chicago Heights Terminal Transfer Railroad on which are situated between 80 and 90 industries, and through the operation of such Terminal Railroad, the manufacturers and receivers at Chicago Heights are enjoying a better service than in the history of that active community.

In the handling of perishable freight, new icing facilities have been provided, thus expediting the movement of the through trains.

The Dearborn station, at an expense of over half a million dollars, has been substantially enlarged and improved with modern facilities in every department, well lighted, heated and with comfortable waiting rooms. The restaurant at the Dearborn station is exceptionally well operated.

The C. & E. I. is well supplied with motive power suited to its traffic. Improvements resulting from more modern appliances have been added from time to time so that increased efficiency has been secured by the use of improved grates, syphons, lubricators, injectors, etc.

To take care of this motive power, the C. & E. I. has provided more modern facilities, such as enginehouses equipped with up-to-date machinery, turntables with greater capacity, engine washing devices, and a substantial addition to the machinery at all the repair points on the line of the road.

It is hardly necessary to add that constant study is being carried on looking toward further improvement in this respect.

Milestones of Progress

By V. V. Boatner
Prest., Chicago Great Western

The ability of the railroads to meet completely the growing national need for railway transportation has been an outstanding achievement of the past decade. Car shortages have become practically unknown and this in the face of an ever increasing demand. On time performance of trains; improved relations between shippers and railroads, due in part to the splendid functioning of the Regional Advisory Boards and to the railroads' efforts sincerely to build service; these are some of the milestones along the highways of railroad progress.

Sound public opinion is another notable development of present day railroad operation. The railroads themselves have earned that opinion. It has helped them to render better service. Its continuation is necessary not only for the protection of that service but for the advancement that must be made if the railroads are to continue to keep pace with the nation's increased demand for transportation. This means a recognition of the railroads' rights to a proper return upon their investment through adequate rates and a growing support in the form of public approval of helpful legislative tendencies and a condemnation of those which are bad.

In the march of railroad progress the Chicago Great Western has taken a proper place. Improved roadbed and equipment, speeding up of freight service and a general progression are its contribution to the forward strides of the railroad enterprise. It can be counted upon to continue a public service in keeping with the high conception of its responsibilities, and the active execution of its ideals.

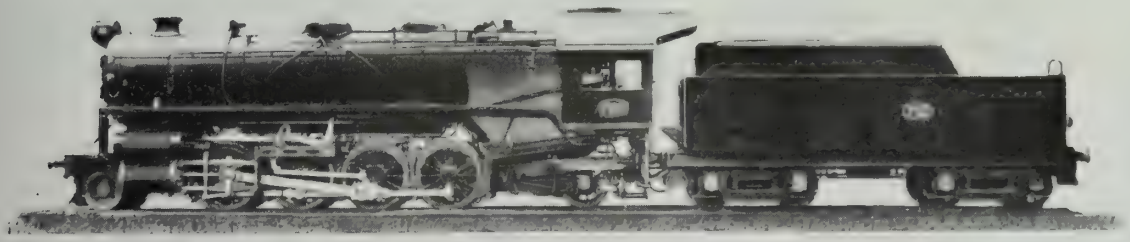
At the C. & E. I. Terminals at Fourteenth Street, Chicago, Stands This New Freight House for L. C. L. Shipments.

SYPHONS

On Modern Power Around the World

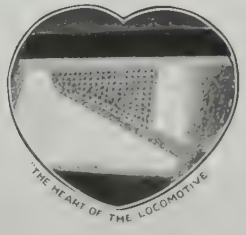
Beyer-Garratt Locomotive of the South Africa Railway. The most powerful locomotive ever built in Europe. Equipped with two Nicholson Thermic Syphons

Beyer-Garratt Locomotive of the New Zealand Government Railway. The largest narrow gauge passenger engine in the world. Equipped with two Nicholson Thermic Syphons



Mikado Locomotive of the South Australian Government Railways, until recently the largest locomotive built south of the equator. Equipped with two Nicholson Thermic Syphons

Circulation
Fuel
Economy



Reduced
Maintenance
Safety

LOCOMOTIVE FIREBOX COMPANY

MONTREAL CHICAGO NEW YORK

What About These Consolidations?

The Commission's Plan Revives Discussion, But What Will Congress Do?

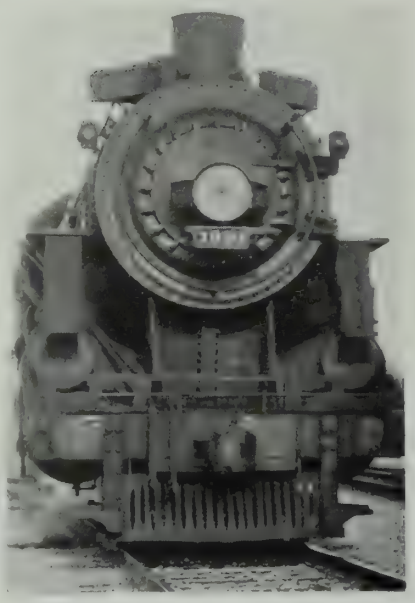
By Lee G. Lauck

Consulting Economist

PROGRESSIVE development in the merging of railroads has been a continuous factor in railroad history. Practically all of the great systems today are products of unifications. In the beginning the impelling motive was the extension of the railways into the large trade centers in order to increase the ability to handle the expanding traffic, and to avoid delays and expense in frequent transfers. Subsequently, however, the movement became actuated by a desire to combine competing systems and the strangle-hold of monoply was substituted as the goal to be gained. Rate agreements, pools, and traffic associations became common. The public and congress, however, were quick to recognize the change in the ends to be accomplished, and the Sherman Act and the Clayton Act properly restrained further consolidations of this nature. In addition merging of parallel and competing lines were commonly prohibited by state laws and constitutions.

Prior to the World War, however, it was recognized that railroad consolidations were desirable. Congressional committees were studying the problems, only to be interrupted by the war and war legislation. Following the war the study of the problem was renewed with the result that congress adopted the policy of railroad consolidation which became law with the enactment of the Transportation Act of 1920.

This law looked into consolidations, under public supervision, of all the railroads into a limited number of systems. The railroads were given a period of years, with a comparatively free hand to bring it about. If they should not do so, then public authority, through the Interstate Commerce Commission was to step in and compel it. The act required the commission to prepare a tentative plan for regional systems to include all the railroads. It contemplated that in each case the consolidating corporation should take over, own and operate properties that previously have been separate and independent. The Interstate Commerce Commission has now formally announced a tentative plan, consequently consolidations will not now be compelled to await legislation lifting this ban.



Just Arrived: The 1930.

Up until a few weeks ago the attitude of the commission to the consolidation question, was a series of decisions and intimations which threw cold water on the merger scheme as it has been conceived by students of transportation as well as by railway executives who have been actively engaged in trying to bring about mergers in the trunk line territory, in the Southwest and in the Northwest. Until then the commission has acted somewhat timidly and appeared befuddled. There was a surprising absence of unanimity of opinion on important questions. One element apparently believed in them, but another was wholly at variance with the idea. The proponents of unification now apparently have carried more weight than the objectors. If there is anything at all in the consolidation principle, it should be exemplified in economies of operation and in a minimum of disturbance to the territory affected. One could not help having the feeling several months ago when reading the decisions of the commission in merger cases that it was more affected by objections to than affirmations of specific consolidation proposals. It is, therefore, somewhat of a relief to know that the commission has finally submitted a tentative program for railroad consolidation to congress.

The public appears to have taken the view that many consolidations are desirable, but that proper precautions should be taken to avoid making railway systems too large, and that consolidations that are desirable could best be worked out by voluntary negotiations, between the railways, with the commission having in each case the final decision to protect the public interest.

The railway executives have always believed that better results could be effected if the railroads were permitted to work out the consolidation plans, rather than have them made by legislative or administrative authority and imposed on the railroads. However, promulgation of the official railroad consolidation plan now definitely shifts to congress the responsibility for enacting legislation to facilitate actual consolidations.

Publication of a plan was the direct result of the refusal of congress to relieve the commission of the necessity of drafting the document despite repeated requests for such relief dating back to 1925. The commission's unwillingness to draft a plan except as a last resort evidently was based on a profound realization of the obstacles involved in the job, and an appreciation of the barriers to prevent it from becoming effective.

That it is a tentative and not a final plan is indicated by the text of the commission's report and the separate comments of several commissioners. It is a so-called final plan in order to satisfy the provisions of the Interstate Commerce Act.

Consultant

On Upholstery

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Without additional legislation there appears no way of compelling the railroads to accept the plan. Whether the adoption of the proposed scheme will speed up railroad consolidations generally unless additional legislation is passed seems a question. Many systems undoubtedly will object to the commission's allocation of roads. In fact those roads which have been waiting for the promulgation of such a plan before taking any steps may now feel that they have the license to come forward with their own plans or to resist stoutly any procedure to take away what they want.

One of the criticisms expressed against the plan is that in many instances it breaks up existing systems or intercorporate stock holdings and it will no doubt meet with vigorous resistance from that angle. Yet there is apparently no way under existing laws by which the commission can force such a severance. Even if a law was passed which gave the commission power to condemn at a fair price (fixed by arbitration) various corporate holdings, it would remain in every case for the commission or the government to find a buyer unless the government itself should think consolidation so important to the public interest to justify it in subsidizing the movement.

Whether congress can expeditiously enact railroad consolidation legislation is doubtful. Chances are it cannot. Any action by this body is now clouded, in the main, by the railroad holding corporation spectre. This situation is to be given careful study with a view to the possible inclusion of regulatory legislation as a result of the strong recommendations in the commission's last annual report to congress calling for such an inquiry.

Benefits arising from the commission's plan are largely negative. Its most helpful effect is seen in the partial dissipation of the fog which has enveloped the commission in a railroad consolidaton way.

However, since a tentative plan has been submitted it is up to congress to begin to legislate and pass a measure similar to the Fess bill, which would be in the interest of the public as well as the railways. In fact, Senator Fess has announced that he would introduce a bill in the senate during the early part of this year providing controlling laws for railroad mergers. He intends to revise his railroad consolidation bill in some particulars, giving the commission complete supervision over holding companies dealing in railroad securities. The gist of the old proposal will be maintained, giving the railroads themselves a veto power over consolidations recommended by the commission.

Under the proposal to be submitted by Senator Fess the railroads involved would be required to submit the consolidation question to their board of directors and a majority of the board would have the power to decide. Dissenting stockholders would have the right to carry the matter into the courts for a final decision. The commission would have

Where the Work Begins.

the right to pronounce the consolidation effective within 30 days after approval by the board of directors. In other words, Senator Fess does not intend to give the commission any further power to enforce its plan.

By all means something should be done which would enable progress toward carrying out the intent of the Transportation Act in regard to consolidations as to which we have been for a considerable time at a practical standstill.

According to financiers and railroad men, the matter of railway mergers has a distinct bearing on the investments of hundreds of thousands of people. The merger possibilities of certain roads have been so stressed as to affect railroad investments and the price of railroad stocks. Those moving for a merger say that unless congress gets busy soon many mergers will be financially impossible, since it will become too costly for a central system to buy or acquire control of a minor line incident to the consolidation plan.

The commission has stated with regard to the method of gaining control of one road by another that it does not approve purchases in the open market prior to its authorization, and it has denied two mergers that were under way, mainly on this premise. While it may be poor business to bid up the price of a stock of a competing road, and thus establish a basis of cost disproportionate to the benefits of the investment, it is certainly absurd to say that any railroad executive should announce to the world at large that he proposes to buy a certain railroad company. What a nice little opportunity this would give to some of the hijackers in Wall Street!

The benefits of consolidation are certainly intangible, and those who have studied them with an unprejudiced mind are inclined to believe that the values in operation and on the financial side of the railroad account have not been overestimated. Some progress has already been made in unification by acquisition of stocks, taking of leases, etc. However, consolidations, when they shall become possible should be made along business lines, so that there may gradually grow up in the country a number of well-balanced systems. It must go forward progressively, step by step, and a great deal of success is possible only under some sort of permissive plan. There should be no attempt to make an arbitrary and general grouping. Each situation as it arises should be studied by itself, with regard to its merits and the general situation.

If the tentative plan submitted by the commission is found to be a logical, well-considered scheme for welding the transportation facilities of the country into an efficient number of systems, appropriately designed to preserve competition, serve the business of the country adequately, and give each of the proposed new systems a chance to earn its way, the year 1930 will mark the start of a new era of prosperity for the country. It has been demonstrated over and over again that the country cannot be prosperous when the railroads are starving.

On the other hand, if the plan merely strengthens some particular railway systems at the expense of weakening others, and disrupts the established channels of trade and commerce in the hope of demonstrating the truth or falsity of some academic theory, there is no telling what will be the outcome, or how far the job of arranging our transportation systems as a logical and efficient whole will be set back.

"The stadium overshadows the classroom—athletics have a dollar sign in front of them."—*William H. Taft.*

Quality Cars Quickly and Efficiently Built by Mt. Vernon--

Our model car shops located at Mt. Vernon. Ill. (in the heart of the country) have an annual capacity of 15.000 freight cars. 150.000 chilled tread wheels and 20.000 tons of forgings.

We also have a separate shop with special facilities for promptly and economically rebuilding and repairing cars.

Canada's Modern Engine Terminal

Toronto, Hamilton & Buffalo Builds A 21-Acre, Direct Steaming Plant

By Riley Harper

A NEW engine terminal, as completely modern as anything on the continent, when one considers its size in relation to others, was finished last month at Hamilton, Ont., for the Toronto, Hamilton & Buffalo Railway. And when one says this it is necessary to reflect that railroads managed by far-seeing, brainy men have been discarding obsolete materials and machinery, including locomotives, just as rapidly as means were available. The plant at Hamilton, with its 20-stall, direct steaming enginehouse, and about every other facility needed nowadays, must be included in that category as the product of wise men who realize there is little sense in retiring employes because they are supposed to have reached an age limit, but keeping in operation—when they can—all the old, worn-out makeshift equipment with which, very often, the road began its life.

The Hamilton engine terminal is on a site covering 21 acres, formerly a brickyard, on the southerly side of the tracks of the Brantford subdivision between the old shops and Aberdeen yard in the westerly section of Hamilton. The location is admirable in all respects from a railway standpoint and is more or less remote from real estate development. Grading began in the autumn of 1928, and was finished last summer. Building operations began in June, and all facilities and buildings were expected to be ready at the end of December.

The enginehouse, containing 20 stalls, 110 feet long, and seven stalls 155 feet long forming the drop pit and repair section, is of concrete and brick construction with 60 ft. and 72 ft. trusses supporting the roof between Monitor windows. The whole structure is hot air-heated through underground ducts from two unit heaters. There are, of course, concrete inspection pits, two drop pits, one for driver and pony wheels and one for tender and trailer wheels, fitted with Whiting Electric Jacks, with telfer track leading from the drop pit section to the machine shop. The house is equipped with ten-ton electric traveling hoist to handle wheels and other equipment from drop pit section to machine shop. The floors are of concrete construction laid on gravel base, the whole of the enginehouse area was dug out and backfilled with gravel and consolidated with water. Windows are wooden throughout.

Direct Steaming, 27-Stall Enginehouse of the Toronto, Hamilton & Buffalo Ry., at Hamilton. Note the absence of Smoke Jacks.

There is a 100 ft. 3-point continuous type turntable, supported on a concrete center pier and concrete ring, with 127 lb. circular rail on plates supported directly on the concrete. The turntable is operated by two electric drives and one air auxiliary operated from one operator's cabin.

The machine shop is 80 ft. by 160 ft.; is of brick and concrete construction with steel truss roof construction and steel sash pivoted windows; floors of concrete and asphalt mastic construction. Foundations will be prepared to receive certain machines from the old plant and new ones on order.

Adjoining the machine shop and repair section of the enginehouse is the facilities building, 18 ft. 6 inches by 103 ft.; two story, brick and concrete construction with steel sash pivoted windows. This contains offices for general foreman, dispatcher, registering room, locker room, toilet and first aid rooms and drinking fountains on the ground floor, and shopmen's and engineers' rooms, toilet and supply rooms and drinking fountains on the second floor. The blacksmith shop is 60 ft. by 80 ft.; of construction similar to machine shop.

The storehouse is 77 ft. by 185 ft.; brick and concrete construction, one story high; heated section containing oil vaults and office with floors at car floor level, and unheated section of frame and galvanized iron, with floors at yard level. Platforms and ramps are provided for both car and truck deliveries in double-quick time.

The power house is 65 ft. by 130 ft.; brick and concrete construction with steel sash and steel trussed roof. The power house has three 260 hp. boilers, with room for one future boiler, 1400 CF. steam-driven air compressor, boiler washing and filling tank and pumps, switchboard room, and coal truck, which is approximately 9 ft. above the boiler room floor.

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If you equip your power with GRAHAM-WHITE SANDERS

GRAHAM-WHITE SANDERS are automatically self-cleaning, and insure traction under all conditions of rail or weather.

Their first cost is quickly returned in the savings effected in sand, labor and repair parts, while the efficiency of a power unit is increased in a marked degree.

Use GRAHAM-WHITE SANDERS and load to capacity at all times.

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ROANOKE, VIRGINIA

T-Z Railway Equipment Co.
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Coal is elevated to hopper above boilers and piped into stoker hoppers. Ashes are handled by a steam jet system from the boiler room to a 41-ton cast-iron hopper over coal track outside the power house. The chimney is 175 ft. high with an 8-ft. inside diameter at top, and is built of Cooksville tile brick with opening for smoke breeching, 5 ft. by 12 ft.

The office building for the superintendent of motive power, and staff, is 40 ft. by 50 ft., of brick and concrete construction, with two storys and basement. Windows are of steel sash and floors of hardwood.

The sand handling facilities consist of a building 20 ft. by 80 ft., containing one Beamer Patented Steam Sand Dryer with gathering hopper and screen to R. & S. Standard sand elevating drum, from which it is elevated by compressed air to an overhead dry sand storage in coaling plant structure where it is delivered to engines through sand spouts. Capacity of wet storage, 500 tons, and capacity of dryer, 8 tons a day.

The cinder handling plant consists of one "N. & W." type, electrically operated, selectively controlled outfit serving three tracks. The capacity of the bucket is 80 cubic feet. The plant is equipped with selective controller for automatically stopping bucket under any track, as desired, and stopping at its dumping position at the top of the structure. A push button station at each track is provided so that the bucket may be returned to the dumping position for any track, as desired. Hoppers and control gates are of cast iron and are equipped with a locking device to prevent the hopper being opened and cinders being discharged except when the bucket is in the filling position.

There is a coaling plant consisting of a 300-ton, Roberts & Schaefer reinforced concrete, automatic, electric, R. & S. shallow pit roller skip type with hoisting capacity of 75 tons an hour; elevating bucket two tons capacity. The latest devices are employed to insure safety and convenience. After the machinery is put in operation (by electric push button) the operator may devote his time to dumping cars over the track hopper or attend to the sand handling plant while the elevating process is going on.

The direct steaming system is installed. By the use of this locomotives first have their fires removed prior to entering the enginehouse, and when placed are connected with a high pressure steam system, or blown off, washed out, refilled and steamed. This consists of a 20,000 gallon steel hot water washout and filling tank, condenser and separator, and horizontal duplex steam pump with a capacity of 400 gallons of hot water a minute, blow-off, filling and steam lines, valves and thermostats. Steam will be furnished at 225 lbs. boiler pressure, and steam, hot and cold water drops will be provided at each stall, with an extension into the drop pit or back shop section of the enginehouse for steaming locomotives after completion of repairs.

In the selection of this site and the final determination to adopt a direct steaming system, contract for which was the first of its kind to be let in Canada, due consideration was given to the matter of smoke abatement. The results to be secured by such an installation are of very great benefit, not only to the company but also to the City of Hamilton. A saving in fuel, reduced boiler maintenance, reduction in fire hazard, saving in enginehouse labor, quicker dispatching and better working conditions will be effected for the railway company, and the smoke nuisance, always a source of annoyance to surrounding territory, will be abated.

Stations for firing up locomotives immediately after leaving the enginehouse under steam from the direct steaming system, are provided on the outgoing tracks, and consist of a small housing for oil torch with oil and compressed air service by which engines are fired in two to four minutes.

There are three Connelly watertube boilers, 260 hp. each, equipped with Detroit multiple unit rear dump stokers, with separate stoker engines, auxiliary fans and turbines.

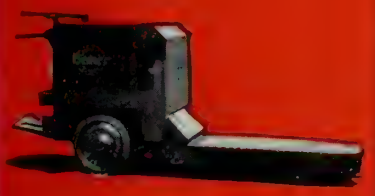
A 6-inch and 8-inch connection with city mains, forming a loop through the engine terminal site, with the necessary hydrants and valves and hose houses provides adequate fire protection.

The water supply consists of one 100,000 gallon tank and one 50,000 gallon tank with 6-inch supply and 14-inch discharge into 12-inch mains, furnishing water for four 12-inch Sheffield water columns.

The track system consists of one incoming and two outgoing tracks from the east direct to turntable and one incoming or outgoing track from the west, with coal and ash tracks. The storehouse and power house are served by individual tracks. Six engine standing tracks are furnished in connection with the turntable.

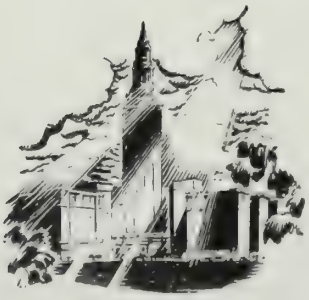
The entire terminal is being served by a specially constructed high tension line by the Dominion Power and Transmission Co. It is direct from that company's main service lines and having practically no voltage fluctuation will give excellent motor operation and reduce lamp replacements to a minimum. The high tension lines are brought into the power house, which is equipped with the latest type Westinghouse switchboards, serving two individual outdoor transformer banks, one near the power house and one about 500 ft. south of it for equal power distribution, all low and high tension feeders being laid in under-

Panoramic View of the New Engine Terminal of the Toronto, Hamilton & Buffalo Ry.



Baker

IN HUNDREDS of shops, yards, stores and terminals, Baker Trucks, Tractors and Cranes are doing their very considerable part to speed up freight and reduce handling cost. Bakers can reduce necessary man-hours by 75%, increase storage capacity 300%, and pay back their entire cost—in payroll saved—in a few months.



Cleveland's vast new Union Terminal, where Bakers will be used.

Baker Industrial Truck Division of

THE BAKER-RAULANG COMPANY

Cleveland, Ohio

ground ducts throughout. The terminal yard is illuminated with 8 1000-watt 24-inch floodlight projectors and 14 500-watt lighting fixtures. The total lighting capacity is 150 KVA and the power 350 KVA.

From a construction standpoint, the site chosen could not be excelled. About 240,000 yards of grading was necessary to obtain the required track and building levels. The subsoil was hard dry clay and was most favorable for the construction of heavy works such as the power house, chimney, enginehouse, turntable and coaling plant.

The construction of the terminal was carried out under the direction of R. L. Latham, chief engineer of the railway company, with E. M. Brennan, resident engineer in charge. The Dominion Construction Co., Ltd. had the contract for the grading, foundations, and sewer and water mains. Superstructures by the same company and W. H. Cooper. Roberts & Schaefer, Chicago, provided the coaling station and the ash and sand handling plants. The direct steaming system was supplied by the Railway Engineering Equipment Co., Chicago. Motors and other electrical equipment by the Canadian Westinghouse Co.

The Cinder Handling Plant.

Rough Handling in Russia

By Bert G. Mitchell

In Russia a Tsarsky engineer was one who drove the engines pulling the Tsar's specials and other trains of the imperial government. The man that got the job had to be pretty good; it took years of service and a flawless record of smooth and skillful handling of trains. Under the spell of the impending revolution in the early part of 1917 great numbers of soldiers were deserting and heading for home. Many were simple peasants from Siberia, and transportation to their far-away homes was a vital problem to be solved usually in the direct and summary fashion of soldiers, by deserting.

The deserters would establish themselves in empty teplooshkas. A teplooshka is a Russian freight car about half the size of the average American freight car, fitted with a low chimney making it possible to heat the cars.

When a train entered a station a group of deserters would cover the engineer with their guns, compel him to uncouple his engine from the train he had brought in and hook it on their string of teplooshkas. By doing this often enough the deserters finally reached home. Of course there were accidents. Sometimes when the deserters covered the engineer an excited, drunken soldier would pull the trigger. Sometimes the engineer, loyal to his job, refused to abandon his train, and when this happened several triggers were pulled.

A spirit of hostility toward the deserters and a desire to avenge the death of their comrades spread among the brotherhood of the Russian engineers. However, since an engineer always was outnumbered ten to one, there was little that could be done.

One day fifteen teplooshkas, filled with deserters, pulled into Batraky, near the Volga River. Batraky is the beginning of the Samara-Zlatoust section of the Transsiberian Railroad. Here the cars were attached to a train of goods-wagons, as the regular freight cars are called in Russia. A little later passenger train No. 5 from Petrograd pulled into Batraky. Mefedoff was the engineer, one of the proudest of the Tsarskys. As he stepped from the cab his progress was blocked by the guns of the deserters. He was ordered to take his engine off No. 5, cut out the goods-wagons, and take the teplooshkas down the line in the direction of the Russo-Siberian border.

A 300-Ton Mechanical Coaling Plant.

Proud Tsarsky Engineer Mefedoff abandon his train! It was unthinkable. Looking down the muzzles of the deserters' guns, he thought the matter over. An idea came to him. With a haughty squaring of his broad shoulders he nodded assent to the demands of the soldiers. The dignified station master (called "krasnogolovy" or red cap because he wore a red cap when on duty) came down the platform with orders. Mefedoff quickly explained the situation. He was asked to instruct the flagmen at both ends of the great Alexandrovsky Bridge across the Volga River not to flag him down if he exceeded the speed limits on the bridge and, in no case, to stop him.

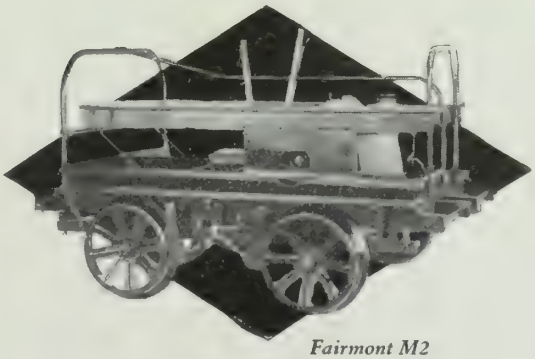
Then Engineer Mefedoff coupled his big engine to the teplooshkas and pulled out for Samara. The fireman began to warm up as the train went faster and faster until the swaying teplooshkas seemed about to jump the track.

The fireman understood and grimly he had smiled when Mefedoff had told the station master back in Batraky something about teaching deserters a lesson. About three weeks previously this fireman had lost a brother at the hands of drunken deserters who had shot him to death because he refused to start his train without refilling the water tank.

The train flew past Right Volga

VISION

"This is my second great step for my country," said Charles Carroll, signer of the Declaration of Independence, when he turned the spade of earth for the first railroad to the west, on July 4 1828. Time has justified his forecast. . . .When one considers how closely Prosperity has followed the tracks of the railroad, there is nothing but admiration for the Men of Vision directing their destinies.



Fairmont M2

Standard Section Car seats 10 men; top raises for adjustments·6 H. P. engine Endless Cord Belt Drive.

Progress, whether measured in railroad systems or railway motor cars, depends upon foreseeing the needs of each dawning day. VISION made possible the brilliant expansion program of the railroads; and, in the sphere of motor cars, played the part that led to Fairmont supremacy.

Needs, as they developed, have always been anticipated by Fairmont. A survey of all worthy improvements, such as ball and roller bearing engines, show that the great majority were engineered and pioneered by Fairmont, in the striving toward *"Lowest Over-All Cost Service."* This goal has been attained—proved by the fact that *over half the motor cars now in use are Fairmont products!*

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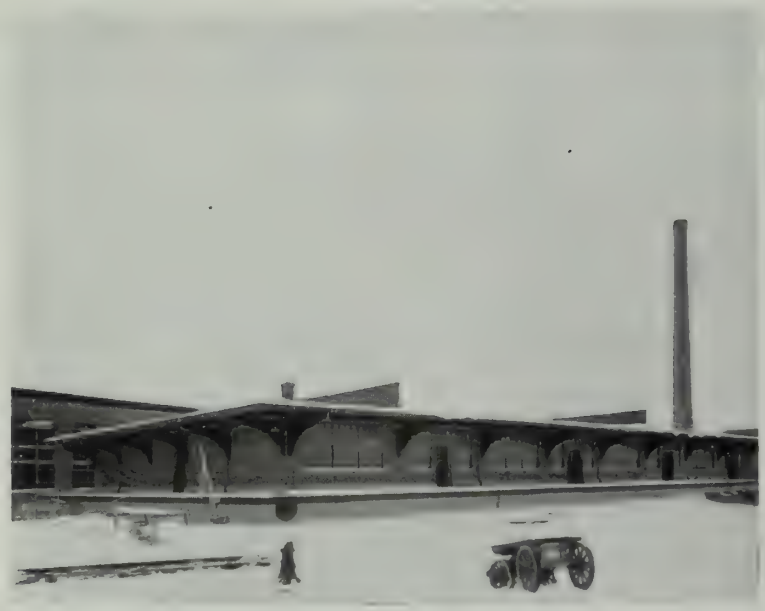
Fairmont Mudge Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT



The Company's New Storehouse at Hamilton, Ont.

flag stop, the near end of the Alexandrovsky Bridge, at a speed of sixty versts an hour, about twice the permitted rate. A verst equals about two-thirds of a mile. The flagman at Left Volga, obeying instructions, gave a clear track to the train running at outlaw speed. Close to Obsharovka Engineer Mefedoff suddenly threw on his brakes, making the train give a tremendous lurch. The groans of the battered deserters mingled with the screeching of the engine's brake shoes. Just as suddenly as he had slammed on his brakes, Mefedoff released them and jerked the train into motion. Some rough handling.

The European coupling on a teplooshka permits a very loose connection. In addition to this the teplooshka has no brakes. These two facts contributed very much to the sharpness of the jerks when the engineer was applying and releasing the brakes on his engine.

When the train stopped at Obsharovka for water, the deserters loudly begged: "Mr. Engineer, not so fast! Drive a little slower!" Engineer Mefedoff heard but he paid no heed. The deserters had demanded speed at the point of a gun and he would give it to them! Accordingly he repeated the jerking of the speeding teplooshkas many times on the way to Samara.

It was not a pleasant sight when the doors of the teplooshkas were opened at Samara. Deserters were lying about in heaps, contents badly damaged, bones and muscles aching. Engineer Mefedoff had avenged the death of his comrades, and the fireman had some satisfaction for the murder of his brother. For about two months after this deserters avoided the engine crews on the Samara-Zlatoust section of the Transsiberian Railroad. They wanted no more speed.

A highbrow is one whose learning has outstripped his intelligence.—*Vincent Massey.*

The dream is short, the repentance long.—*Schiller.*

Now, If Someone Will Buy It

Overstuff lounges, writing desks, radio, and other features for the comfort of the traveler are offered in a newly developed club coach now available for motor bus operators. Built by the Bender Body Corp. of Cleveland, and mounted on a White six-cylinder Model 54-A this luxurious bus was designed for charter purposes and for extra fare work. Twenty-five passengers can be carried with ample baggage space provided through overhead racks. There are five full-sized lounges and two half lounges. In the center is a mahogany writing table and cabinet for radios. The all-metal interior provides for any color scheme desired. Candle-stick lights are mounted above each lounge and are silver finished. In addition to the 25-passengers a seat is provided for a porter or conductor. Magazine racks, food cabinets and shelves for the carrying of sweetmeats, cigars and cigarets are provided. The rear of the bus is of full observation design with a window the full width of the bus. Pullman roller curtains and a non-shatterable glass are used throughout.

In the past six years the railroads of this country have expended nearly nine billion dollars for material and supplies. This has all gone into industry, making work for men and profits for manufacturers.

Every Time the Railroads Get Up a New Idea in Comfortable Trains Along Comes Someone With a Motor Coach Like This One. And It Carries a Radio! You Can't Escape.

Direct Steaming

FIRST FUNDAMENTAL IMPROVEMENT
IN LOCOMOTIVE TERMINALS

NO STAYBOLT BREAKAGE
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Editorial Comment

The Progress Edition

Persons well acquainted with the facts, and particularly the men who have rejuvenated the railroads of the United States in the last ten years, doubtless will smile when they read the words, "Since the end of federal control." Obviously, it should be written, "Since the end of federal *operation*," because nowhere in the whole, wide, and vastly interesting world are railroads so completely controlled by government as in this land of the so-called free.

Therefore, in reading the special articles contributed by the executives of these great properties telling what has been done since March, 1920, when federal operation ceased, it should be noted that not one of these gentlemen has said a word about the irritating regulation to which they have had to submit. This, any fair-minded person should agree, is a fine demonstration of self-restraint, patience under the most trying conditions, every line showing quite clearly a determination to go right along doing the best possible, giving the most satisfactory service to a public fast learning the truth about the burdens of railroad management. No more interesting chapter has been written into the history of American railroads than is presented in this issue of *Transportation*. The magazine welcomes the opportunity to carry the message, an amazing one in many ways, to the traveling and shipping public.

This is no place or time to discuss the wisdom, or the lack of it, shown by the powers which took over the railroads during the World War. It is enough now to say that the government believed it necessary. That railroad men went eagerly to work to repair the damages, and finally to bring the roads to a standard of efficiency never known before, is something to make Americans proud of their race. It is regrettable that such outstanding perseverance and skill should be compelled to achieve its laudable ends despite the strangle-hold of government instead of with the active and intelligent support to which management is entitled.

The entire nation should be concerned in the progress of the railroads under what is called *private* ownership. American railroads are *publicly* owned. Their bonds and stocks are the securities of individuals in every walk of life. They are the foundations of the largest insurance companies. They are the bulwark of banks everywhere. Only the work of management, the actual operation of the properties, is private, and this, in plain truth, still is under federal control.

Another Funny Senator

This department believes, after years of careful observation, that if it weren't for the United States senate life would be a pretty drab affair. We said something about it last month under the heading of "The Funny South." That hospitable region, or rather one of its representatives in Washington, provides the smile for the new year. This time it was Senator Black of Alabama, a gentleman who seems to have been hiding bashfully in the shadow of Mr. Hefflin until quite recently.

Objecting, a few days ago, to the immediate confirmation of Judge Robert M. Jones, a Republican, as a member of the Interstate Commerce Commission in the place of R. V. Taylor, a Democrat, Senator Black said he wished to be assured that the appointees to the commission are "of such character and ability that they will see that the great masses of the people get relief from unjust and exorbitant railroad rates built up on inflated stock values."

In a speech discussing the qualifications of a man for membership on the Interstate Commerce Commission, especially a speech by a southern gentleman obviously so well informed, it is astonishing to see no reference to the Battle of Bull Run, not a word about Judge Jones's religious affiliations, if any. These things are just as important as the candidate's politics in serving the public as a rate-maker.

Just Remember

Nothing is gained by laughing at New Year's resolutions. If men did not make an inventory of their lives at least once a year, an industrial, domestic and social stocktaking, the most alarming results might follow. Think over your own affairs, and see whether you don't agree with this viewpoint.

New Year's resolutions have become a joke for many because their memory is poor and for one other reason to be found at the end of this sermon. They lack determination to practice self-denial. In many cases they are men who, in talking about drinking, declare they can take it or let it alone.

When you make a resolution it is better to say nothing about it. Just put it in storage in one of the little cells you are supposed to have between your ears, and remember it every day.

One of the wisest resolutions any man can make is that he will do the best he can as he goes along and treat others as he would like to be treated. If he does this he will give a day's labor for a day's pay, keep out of debt except for a home, be courteous to the family as well as to the boss down town, and remember—just remember. A resolution forgotten is a proof of weakness, and this is no joke.

A Needed Regulation

The condition of motor cars in your own state may fairly be guaged by what has been discovered in Pennsylvania. Concentrating on brakes and headlights officials in Pennsylvania recently inspected 1,888,000 automobiles in that State and found approximately two-thirds of them in need of repair immediately.

There was a total of 1,332,000 cars in need of repair. Some of the defective cases were so extreme that cars would be unfit for use until replacements were made. In this class there were those cars whose headlights required wholly new lamps. Ten per cent of the cars inspected were in this class. Another 56 per cent required lamp adjustments.

The time is coming when all the states will re-

quire evidence of mechanical fitness before issuing licenses, in the opinion of Pennsylvania officials. Such regulatory legislation already is under discussion in several states.

Consolidations

If you chance to have time for only the daily paper of you own town or city you are likely to have little conception of the nation-wide discussion going on right now about railroad consolidations. What was said in these columns in December about "Something to Talk About," is still good. The talking and the writing is on in full swing everywhere, and the opinions differ as much as the grammar.

Railroad executives are saying nothing, or at least precious little. President Sargent of the Chicago & North Western, being about the only one quoted up to the time of this writing. Mr. Sargent didn't say much, but what he did contribute toward the nation's enlightenment was right to the point, as usual, and represented what many persons would have said if they had figured it out since the Interstate Commerce Commission made its report to congress.

"The report," said Mr. Sargent, "was made, doubtless, because of the requirement of the Transportation Act, passed nearly ten years ago; the reasons for enacting that law have largely ceased to exist."

Obviously there are a few gentlemen, now trying to keep the breath of life in certain expiring companies, who would welcome any plan likely to help them out of a hole; like widows with flocks of children, willing to marry almost any good provider. Roads in receivership for years; roads that never should have been built; roads that droop along from year to year, hungry and tired; stockholders who never have seen a dividend: All these would like to be consolidated with someone or something. This is a perfectly natural attitude, but one not likely to be satisfied for a few years to come. Senator James E. Watson, Republican whip—the job Vice President Curtis had before he began to worry about where to sit—Senator Watson declares there is or are 60,000 miles of "weak lines" in the United States that "must be cared for and incorporated before they go into the scrap heap." Many persons believe that would be the right place for them.

Even the commissioners are not agreed about the plan presented to congress. Frank McManamy, the new chairman, says what a good many other well-informed men say: that consolidations are much less necessary now than they seemed to be ten years ago. Mr. Eastman, a careful thinker in railroad matters, believes that "in view of the improved situation there is no reason in experimenting with a reasonably satisfactory situation by radical attempts to promote consolidations out of hand on a grandiose scale, and there is, on the contrary, every reason for proceeding cautiously and conservatively. There is reason to believe that the country is becoming considerably alarmed by the progress of consolidations and unifications among industries in general. It is feared that control of industry is rapidly passing into a few hands, with the danger that we shall become predominantly a nation of clerks and subordinates."

Out of all the clamor one gains the belief that a great many persons have been misled with respect to the possible benefits of consolidation. Many expect the proposed marriage to result in the most wonderful saving of money. This has not been the result in England, and can scarcely be said to have proved marvelously economical in Canada, so much closer to us. True, most of our big Class 1 lines are made up of hundreds of short ones, but when they were consolidated the conditions were wholly different from those affecting present day railroading.

It is enough now to say that the commission's plan, which seems to be a kind of compromise offer, as if the commission wished to rid itself of an extremely difficult duty, will not be accepted by anyone in haste, especially in congress. It is safe to surmise that the famous Nickel Plate merger, in point of time consumed, will be dazzling in contrast.

Many of the big roads would like to go about their business, bachelors in transportation. This is because the men at the head are mostly married, and know there isn't anything in this "two as cheaply as one" program. Fifteen systems or 21, it will be a long time before men and courts and congress come to agreement. Meanwhile, as we said last month, we have something to talk about.

A Fast Train Was Overlooked

An official of the Atlantic Coast Line has taken exception, good-naturedly, to the failure of Mr. Lauck to include some of the fast service of the railroad mentioned, in his article about the world's speedy trains, published in *Transportation* in November. This gentleman, to whom we offer our sincere apology, reminding him how impossible it is for any one person to know *all* the trains in the world, says in his letter:

Having had considerable to do with the development of fast passenger service to and from the Southeast, I am naturally disappointed to find that Mr. Lauck failed to include in table Number 1, some of the service in which the Atlantic Coast Line participates. For example, the "Havana Special," a year-round service, leaving New York at 6:50 p. m., arriving Key West, Fla., 7:40 a. m. the second morning, makes the run from New York to Key West, 1,490.2 miles, at an average speed of 40.5 m. p. h. So far as we have been able to determine, this is the fastest train service in existence for the distance traveled. Another service is the "Everglades," leaving Boston, Mass., at 4:30 p. m., arriving Jacksonville, Fla., 9:50 p. m., the following evening. This train makes the run from Boston to Jacksonville, 1,217.3 miles in 29 hours and 20 minutes, at an average speed of 41.49 m. p. h. Still another important service is a seasonal train, "The Miamian," leaving New York 9:40 a. m., arriving Miami, Fla., at 6:00 p. m. the following day. This train makes the run, 1,334.4 miles, in 32 hours and 20 minutes, or at an average speed of 41.27 m. p. h.

When the distance traveled is considered, it is apparent that these schedules compare favorably with the fastest trains in this country, and the schedules are superior to a number of those included in Mr. Lauck's table Number 1.

The Wild Cat Stage in Aviation

Leading executives of the aviation industry believe the present recession, recently so noticeable, will not prove important in the course of time. While the air passenger business has been backward for some time it is believed the worst of the decline has been passed. Well-founded companies, properly financed and able to sustain what is only a temporary set-back, are certain to succeed. In practically all undertaking so important as aviation is proving to be it is the first generation that pays the bills. Careful inspection of planes, the cancelling of flights in dangerous weather conditions rather than trying to maintain a tradition of flying always according to

Get Back The Lost Tractive Effort

The Locomotive Booster

WHEN expanding boiler capacity brought the trailer truck, the locomotive sacrificed potential tractive effort.

This The Locomotive Booster restored by putting the trailing wheels to work.

Today the ideal locomotive is designed with enough drivers to haul the desired tonnage over the road relying on The Locomotive Booster to put the train in motion.

Without the Booster, additional drivers must be provided to supply the needed starting effort. This means added maintenance of 5 to 10 cents per mile as against a Booster maintenance of half a cent per mile.

Build a locomotive only as big as you really require, otherwise it is wasted capital and needlessly expensive to operate and maintain. On such a locomotive, the Booster can always be used to advantage.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

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schedule, will revive and strengthen public confidence. Educational publicity telling the people the truth about what is still a new form of transportation will win. It can not fail.

Through German Eyes

The handicap of regulation under which railroads operate in the United States, based upon the analysis of an experienced railroad official, Dr. L. Homberger, comptroller general of German Railroads, should be interesting reading for members of congress. The quotations contained herein are from a book the doctor has written, circulated by the German Tourist Information Office in New York.

"It must be considered," says Dr. Homberger, "that the companies are not sufficiently unrestricted in their movements to be able to develop without restraint. To a much larger extent than one can imagine, they are restricted by government supervision. This, before all else, one has to take into consideration in order to gain a correct perspective.

"Significant is an expression which I once heard in this connection, and which made a strong impression. 'I would not have thought,' I once remarked to the comptroller of one of the largest companies, 'that the American railroads, being private concerns, are so much handicapped by government control.' 'Who tells you,' he replied, 'that the American railroads are private concerns?'

"Admitting that this was intended as an exaggeration, still it is basically true. The companies are so restricted in their own free will that to follow a clear program of independent economic development is more or less impossible. This, of course, has not remained without consequence for the entire attitude of their management.

"A well-known banker told me: The railroads are, after all, by far not as interesting for us as they used to be, as existing regulations prevent sufficient revenue. That has caused the best brains to switch over into other business fields.

"This also may very likely be exaggerated; the fact that I mention these points here in the beginning will show how much this question has occupied me and what importance I attribute to it. Existing government supervision, as will be shown more in detail later on, is the cause of business policies which always have to pay attention to certain outside considerations, instead of looking at things only from the viewpoint of traffic and its development."

Air service, Dr. Homberger believes, probably will soon cause a further decrease of passenger traffic on the railroads, partly because of the great distances in this country. The author does not regard as satisfactory consolation the American explanation, the decrease in passenger traffic, to a large extent due to the automobile, is not so dangerous in view of the extraordinary increase in freight traffic. "If one asks what the American roads are doing against this competition, not much of great importance can be told."

Close Inspection Needed In Aviation

It is reported from Washington that up to June 30, 1929, less than 50 per cent of the airplane engines tested by the bureau of standards have met successfully the department's requirements on the first trial. This shows the necessity of conducting type tests before authorizing the use of new types of engines in interstate commerce. The government makes no charge for these tests, although the manufacturer is required to provide his own fuel and oil.

Each power plant is considered on its own merits and there are no standard requirements as to weight per horsepower, or fuel or oil consumption per horsepower-hour. Sound design, adequate material, good workmanship and reliable performance of the engine and of its accessories are required.

It is just such watchful, scientific inspection as the bureau and the department of commerce can give that will serve to protect aviation in the future from tragedies so numerous in the last few months. Those who may resent governmental guardianship must remember that the activities of the bureau of standards and aeronautic licensing and inspection service have as their primary object the protection of the flying public and of the aeronautic industry by endeavoring to assure airworthy aircraft, adequately equipped and efficiently maintained, flown by competent pilots in conformity with standard air traffic rules.

Why Railroad Lawyers Smile

Johnston B. Campbell of Spokane has resigned as a member of the Interstate Commerce Commission. Men rarely give up such jobs until they see something much better ahead. Mr. Campbell, a partisan of what is called the intermountain territory, has never been exuberantly friendly with railroads. His attitude on the bench, or whatever it is the commissioners use for seats, has seldom evoked cheers denoting satisfaction among railroad counsel. Mr. Campbell naturally belongs on the shippers' side of the room, which is not said in a disparaging way. It is understood he is to remain in Washington D. C., and practice law.

Regulation of Aviation

There is just one argument in favor of putting aviation under what Chief Justice Taft once called "the fostering care of the Interstate Commerce Commission." Aviation, in the fullest meaning of the word, is transportation. Like the railroads, it has nothing else to sell and as, sooner or later, it will be a serious competitor of railroads there is no sense in permitting it to continue making its own rates. The commission, naturally enough, will not welcome another burden, but certainly the department of commerce is not competent to make rates, prescribe accounting methods, and perform all the other numerous items of regulation now delegated to the commission.

It should be possible for the department of commerce to watch over the proper licensing of planes and pilots without coming into violent conflict with the amiable commissioners. There are already three bills before congress looking to the regulating of aviation. These, with bills to regulate interstate motor buses, and bills about consolidating the railroads, ought to produce some debates this winter.

The court of last resort, said Elbert Hubbard, is not the United States Supreme Court. It is the people.

THE great power and the extreme simplicity of Improved Hipowers give you double economy. Their power gives you efficient bolt tension with essential flexibility for expansion and contraction of rail, and the simplicity offers you a spring washer that can be carried, applied, and replaced, at the lowest cost. Ask your experienced trackmen — they *know*.

The National Lock Washer Company
Newark, New Jersey, U. S. A.

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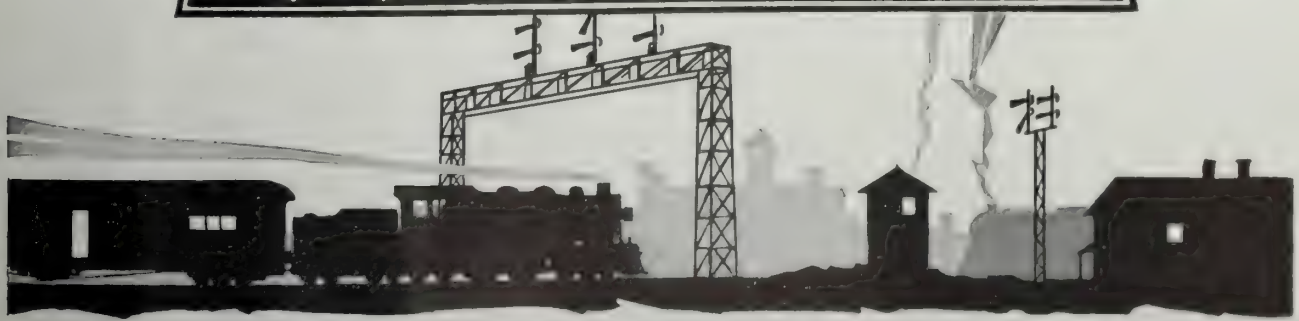
The High Bolt Tension Spring Washer
Rust proof. Commercially non-flattenable. Ultimately costs less



Fred W. Sargent

Little Stories About Big Men

ONE OF THE youngest railroad presidents in the United States, Fred W. Sargent, took to the Chicago & North Western Railway, itself a far-seeing, adventuresome pioneer road of the Great West, a heritage of the pioneer spirit which has encompassed the United States with bands of steel.

His father, a resident of Portland, Maine, felt the urge to conquer strange lands, and began a journey to a country which was then a wilderness, the plains of Dakota. For years he made his livelihood buying cattle from the Sioux Indians, who wore blankets and eagle feathers as their everyday dress when they came down to the landings at the agencies on the Missouri River to see the boats go by, those old side-wheelers which cruised up and down the muddy Missouri.

Riding across wild government land in Dakota Territory, Sargent's father picked out a site for a homestead on the west bank of the Big Sioux River. This homestead still belongs to the Sargent family, which holds a title directly from the government. Later he bought land on the Iowa side, and platted part of the farm for the village which he called Portlandville. Because of the length of the name, Portlandville was changed to Akron. Here the first flour mill was built in Dakota by Sargent, run by power from the Big Sioux River, and ranchers hauled their grist to him from distances of 150 to 300 miles.

Fred Sargent was born in Akron, Iowa, in 1876, when it was a town of five or six hundred people. It was a wild, eventful year in which he first saw the light of day in this little farm on the edge of a new frontier.

In the East the nation was celebrating its one hundredth birthday anniversary at the Centennial Exposition in Philadelphia. To the West, feverish gold seekers were outfitting at Sioux City, a few miles below Akron, for the long, hazardous journey to the fabulous gold diggings of the Black Hills, up the river to old Fort Pierre and across the Sioux reservation in ox-drawn wagons. In late June of that year, the gallant General Custer rode with his men to the historic massacre at the hands of the Sioux on the Little Big Horn, the massacre that concentrated the attention of the United States government on Indian welfare in the West.

In half a century Fred Sargent has seen that wild, frontier country go through a process which has made it the richest corn belt in the world, the state of Iowa. The plains on which his father used to buy cattle from Indians have been submerged into two important states, the Dakotas. And in this growth the rail-

SELF-PROPELLED COMPRESSOR and "STRAIGHT BACK" TIE TAMPERS

On The Job

MANY railroads are using these units because of their convenience, speed and reliability. The standard CP Compressor is mounted on a truck frame carrying flanged wheels with Timken roller bearings, transverse shifting wheels and winch, air-operated lifting jacks, lifting bale and a roomy tool box. The gasoline engine that operates the compressor also propels the car at a speed of 12 to 18 miles per hour, depending upon its size. The compressor is furnished in sizes of 110, 160, 220, 265 and 310 cu. ft. per minute displacement. The CP Tie Tampers have several interesting features that are fully described in folder No. 1646. Details of the Self-Propelled Compressors are given in Bulletin No. 789.

Chicago Pneumatic Tool Company

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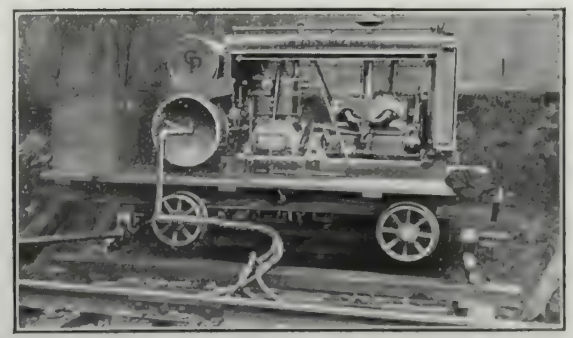
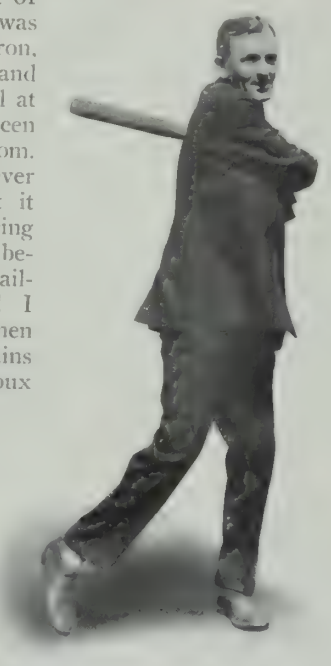


road of which he has been president for three years has played an important part.

Fred Sargent had no intention of becoming a railroad man when he was a youth. As far back as he can remember he wanted to be a lawyer. There are several lawyers in his family, including the former attorney general. "From the time I started to school," he said, "I planned my course with the thought of studying law. When I was in the high school at Akron, I sent for law books and read them evenings, and at that time I had never seen the inside of a court room.

"But railroading? I never thought anything about it until I had been practicing law for two years and began trying cases for railroads. The only road I knew anything about when I was a boy ran three trains a week north from Sioux City, and it didn't interest me in the least."



Mr. Sargent Lines Out a Hot One Starting An Employe Game.

In 1876 the Chicago & North Western Railway had built its lines across Iowa and into Wisconsin, but it was not until 1880 that its right of way finally reached the Missouri River at Pierre. It was building steadily through Nebraska and the Black Hills when Sargent, Sr., moved his family a little farther west to the village of Vermillion on the bluffs above the Missouri River in Dakota, close to the reservation of the still restless Sioux.

It was in Vermillion that Fred Sargent went to school. He also attended the state university there. Later he graduated from the law school of Iowa University. But he went back to Dakota to marry Miss Mary Minier at Flandreau in what, by that time, had become South Dakota. They had attended the university together at Vermillion. Immediately after his marriage he began the practice of law at Sioux City.

Mr. Sargent's affiliation with the Chicago & North Western dates from that time, when he began to handle the local business of the road at Sioux City and the state business for the Chicago, St. Paul, Minneapolis & Omaha, which is a part of the North Western system. In 1912 he went to Des Moines as attorney for the Rock Island.

At the conclusion of federal control over the railroads in the spring of 1920, he migrated to Chicago, where he became general solicitor for the North Western. Three years later in December he was appointed vice president and general counsel.

During the five years from 1920 Mr. Sargent had been making an intensive study of every phase and department of the railroad, and was an authority on its financial affairs, as well as on the resources and the needs of the territory it served. He had had a great deal of experience in railroad law, and had shown a keen insight into the mysteries of rate making. In addition to this he had become identified with the North Western at a time when the best railroad brains in the country were at a premium. His reward came in 1925, when he was elected president, the youngest the North Western has ever had. But he took to the railroad something as important as a knowledge of rates and of law, an inborn love of new and far places, of virgin territory and a capacity for building towns and cities along the right of way of the railroad he heads.

President Sargent is a quiet, soft-spoken man with thoughtful eyes and a rare, charming smile. He has the type of mind found in many of the best lawyers, a practical definiteness combined with a high dream of building empires and following the trail blazers. His hobby, if it may be called a hobby, is building and developing the West. There are times, however, when he may be found on the golf course at the Old Elm Club and Glen View on Chicago's North Shore.

The Rise of R. J. Bowman

When Robert J. Bowman was elected operating head of the Pere Marquette Railway not long ago, J. J. Bernet, chief operating officer of the Van Sweringen organization, said to him, "this is your railroad. Now take it and run it."

Writing of these things in the Atlanta Journal, Lemuel F. Parton says in a copyrighted article that Mr. Bowman is adding another chapter to the railroad epic of poor boys who climb to the top. While this recital is becoming commonplace, he also, in the opinion of experienced railroaders, is in the forefront of a new legion of young, daring railroad builders who will shake up the railroad world more and more as time goes on.

When Mr. Bernet gave Mr. Bowman his curt and casual instructions, doubtless he had in mind what he had done with the Erie. As assistant vice president of this road, one of the Van Sweringen lines, he brought it in two years to the point of paying dividends on preferred stock, after a lapse of twenty years. While it is true that he was Mr. Bernet's assistant in this enterprise, he assumed the rough work of cleaning up the job and the results are already in view for the most casual observer. Three years ago, one used to see switch engines with a bonnet and bustle in the Erie yards, looking as if they had been taken right out of Gody's Lady's Book. Inquiring recently as to what had become of them, a visitor was told that "this young fellow Bowman has cleaned 'em all out."

Mr. Bowman was born in Fostoria, Ohio. His first job was with the Nickel Plate, in 1907, as a freight clerk, at Mortimore, Ohio. While clerking he learned telegraphy and it was this which unlocked the door to his railway career. He proved that he was as adaptable and was always being called upon as "swing man," in various emergencies. He was assigned to the superintendent's office at Fort Wayne, in 1914, where he remained four years.

When Mr. Bernet became president of the Nickel Plate, he sent for Bowman and kept him on his personal staff until 1927. The Van Sweringens took over the Erie that year and soon assigned Bowman to the job of cleaning up and clearing out numerous things.

Mr. Bowman was elected vice president in charge of the operating department of the Pere Marquette upon the retirement of Frank H. Alfred. Mr. Alfred, who had been president of the Pere Marquette, became operating vice president when Mr. Bernet took over the presidency of the Chesapeake & Ohio and the

Proven by Performance

Railway companies in all sections of the country as well as foreign countries are successfully operating Brill Self-Propelled Cars. This universal acceptance of the Brill product is due to the low operating cost, satisfactory performance and general attractiveness of Brill equipment. As evidence of these claims, it is interesting to note the experience of the Southern Pacific Lines.

Resulted in the Purchase of Seven

The 600 H. P. Brill Gas-Electric illustrated above was purchased by the Southern Pacific for three months test service. That this car was satisfactory in every respect is attested by the purchase of seven more Brill cars which are practically identical in equipment. Here, then, is a concrete indorsement of Brill Gas-Electric performance.

Write the nearest Brill office for detailed information concerning the latest types of Brill Self-Propelled Cars.

Automotive Car Division

The J. G. Brill Company, Philadelphia

Chicago Office: Railway Exchange Bldg.
St. Louis Office: Syndicate Trust Bldg.
Pacific Coast Representative: Rialto Bldg., San Francisco

BRILL SELF-PROPELLED CARS

Hocking Valley. Bringing these Van Sweringen roads together under one management was part of the plan of assembling them in a fourth eastern trunk line system.

Mr. Bowman is a worker with an easy going mastery of innumerable complexities and a penchant for cutting through red tape and getting things done. He is particularly successful in his personal relationships, and maintains easy and amicable relations with labor.

We All Have Hobbies

Almost every normal man has a hobby if only you can get him to admit it. Former Vice President Dawes, now American ambassador to the court of St. James, for many years a banker of international reputation, co-originator of the famous Dawes Plan for settling the war debts, is a musician with some pretty fair compositions to his credit. In Chicago is a group of business men whose hobby for many years has been painting—pictures, not houses. Some men make furniture for home use and as gifts for admiring friends, while others find mental relaxation in farming, the growing of strange things, fishing, and hunting in far-away lands. Practically all men, and an astonishing number of women write, and work as hard at it as some free lances who have to depend upon their ability for a living. Then, too, there are those who make golf a hobby, their chief life-long hope being that some day they may make the course in less than a hundred; and this is the most hopeless of all.

F. E. Scott

Some way or other it always has been difficult for us to imagine a traffic man on a railroad having any hobby except the getting of business, but it does happen, and now, while one of the few is traveling in Europe, it is safe to tell of his fine ability as a Musician—Frank E. Scott, assistant freight traffic manager for the Southern Pacific at Los Angeles.

Mr. Scott is a pianist, a cornetist, a bandmaster, and a composer of marches that make you want to step in time and keep right at it. "Every well-rounded man ought to have a hobby," said he, one day before starting abroad.

"Further, to do him the greatest amount of good, his hobby should be as different in character from his work as possible. Get out over the week-ends and play golf or baseball. Chase butterflies or do something that will give you a different slant on life from the job. You will be surprised how much better you will feel when you go back to work. A man who keeps his mind on one thing all the time goes stale, and there is nothing like a hobby to freshen him up."

Robert J. Bowman

It is a well-authenticated fact that all normal infants announce their safe arrival in this world of rampant regulation by loud and irritating yelps. No one knows why they do it, unless perhaps it is because they are indignant, and are voicing a demand for proper clothing. But when Scott was born, in England, it doesn't matter when, he began life by singing in key with the nurse and shortly afterward began blowing his father's cornet. While he was still a youth he held for four consecutive years the amateur championship of the south of England, as a soprano cornetist.

During the years 1914-16 Mr. Scott was bandmaster of the California Greys band of San Francisco. In 1916 he moved to Ogden, and his first civic act after his arrival was the organizing of a band among the employes of the Southern Pacific shops. In this band he played for two years. The band later developed into the municipal band of Ogden. During the years 1918-20 he acted as bandmaster of the Aahmees Shrine band of Oakland, and also played in the Oakland Commandery band. While living in San Francisco he played solo cornet in the band of the Bohemian Club.

Mr. Scott has a son 17 years old who follows in his father's footsteps musically, as he plays the saxophone in the modern mode, and has also organized a small jazz orchestra. To this, however, Scott Sr. objects, contending that a jazz orchestra makes more noise and less music than a boiler factory.

Mr. Scott still blows a "mean" cornet, but his musical ability is by no means confined to that instrument. He can play any wind instrument, but draws the line at strings. However, he hopes to take up the harp in the future.

Another peculiar fact, well known to every musician, is the strange power of the average pianist to make a room filled with social dumbbells start talking with the utmost animation as soon as the timid pianist begins to play. Men and women who never have anything to talk about suddenly develop amazing conversational ability whenever some intelligent person starts his little evening stunt. Well, when Frank Scott plays the piano no one says a word. The wall flowers just listen and when the music ceases they sit up and blink their eyes as if a spell had held them. And this is a fact. No more sincere compliment is possible.

In Blinding Fog

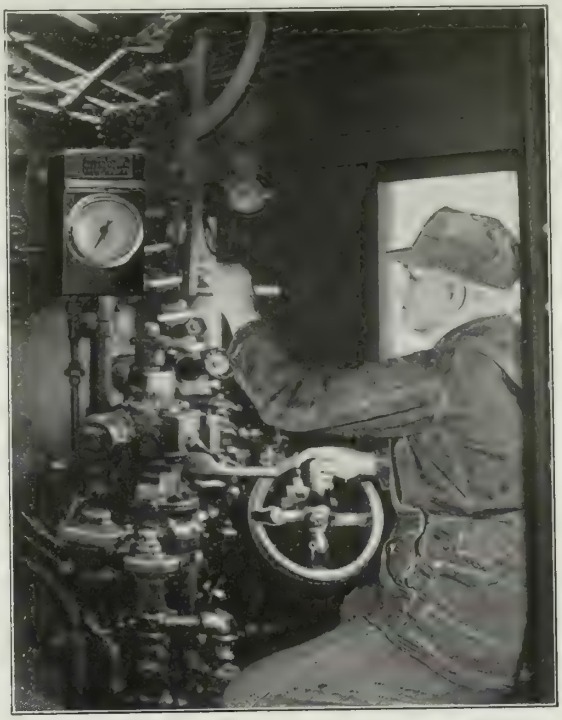
or on the

Roughest Night

a Glance at his

LOCO VALVE PILOT

tells him what his engine is doing



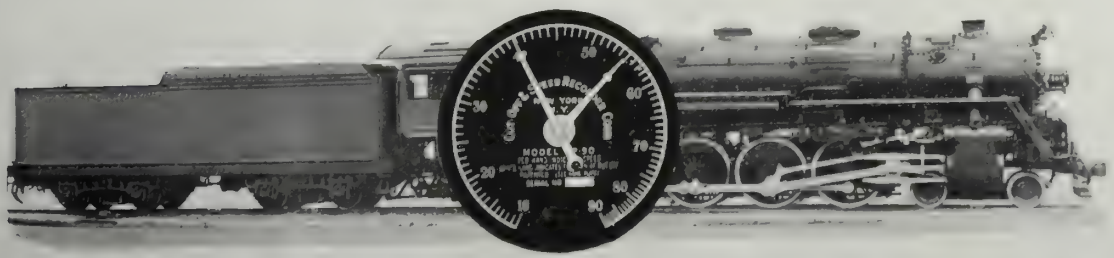
THE LOCO VALVE PILOT not only enables the engine to get better traction as well as more tractive effort with less coal, it also relieves the engineman from the heavy strain of driving through bad weather without accurate guidance.

"Driving by the Cut-Off" has superseded "driving by the throttle" because the *Loco Valve Pilot* makes it easy for the engineer to save steam and at the same time get more work from his engine.

Indicates and Records Correct SPEED and CUT-OFF for Maximum Power or Maximum Fuel Economy

LOCO VALVE PILOT

CUT-OFF AND SPEED RECORDER CORPORATION
230 Park Avenue New York



"A Glance at the Dial is sufficient"

When Time's Money Speed Saves It

Airships, Increasingly Efficient Railroads, and Trucks Solve the Problems

By J. E. Bullard

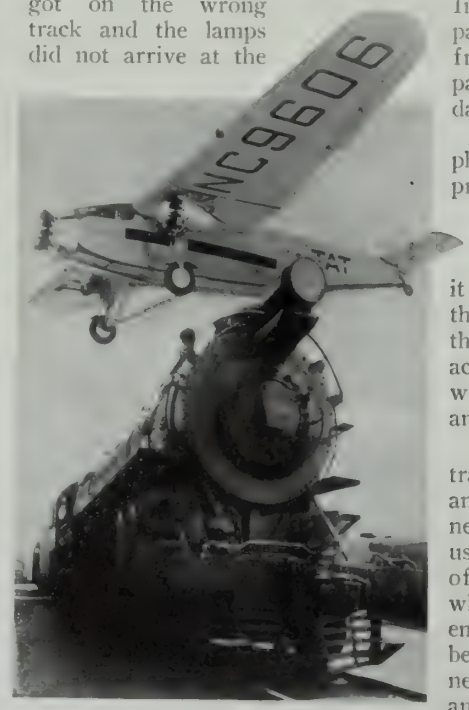
A MAGNETO manufacturer discovered one morning that there had been a slip-up somewhere in the stock room. The entire supply on hand of one small, but essential part going into the magnetos would not last till noon of that day. These parts were manufactured in another factory, and it was either a case of shutting down the plant at noon or getting more of these parts. The firm already was behind on its orders, and it simply would not do to shut down if there was any way of avoiding it.

The manager of the factory making the parts was talked with over the telephone. He had a stock of those parts he was about to ship. He could ship them by airplane. He'd charter a plane by telephone, rush the shipment to the airport, and probably they'd be at the magneto factory by noon if not before. The distance was but 300 miles, and although the cost of transportation was high the factory saved money.

Of all merchandise shipped regularly, silk probably travels at the highest speed. High speed steamships take it from Japan to the Pacific Coast where it is transferred to silk special trains, given the right of way, and traveling at the highest speed safety permits until they reach New York. Every minute during the transportation of silk is worth money. The larger the shipment, the greater the money value of every minute. The saving of interest and premiums on insurance permits the paying of high transportation rates in order to save time.

It is for this reason that interests now giving serious consideration to an airship line between the Pacific Coast and Japan can look with optimism upon the returns these lines may pay. Just as soon as they can demonstrate their safety and reliability so that insurance rates will compare favorably with the rates charged when the goods are transported by steamship and train, and just as soon as they prove they can be depended upon to show a higher average rate of speed than any other mode of transportation available, more and more silk will be shipped by air. At the start, of course, the insurance rates and the transportation charges may be too high even for silk shipments except for samples and emergency shipments.

An automobile company had a train load of headlights on the way. This train for some reason or other got on the wrong track and the lamps did not arrive at the expected time. The point was reached when there would not be enough lamps to put on the cars that were being turned out in the regular course of production. The only satisfactory way of solving the problem was to get the headlights to the factory, or at least enough of them so that the factory could be kept going until the remainder of the shipment came by rail.



Transcontinental Air Transport Plane Flying Low Over a Pennsylvania Train.

The train was found, airplanes were chartered, loaded with headlights and flown to the factory. The day was saved. It was a simple matter to bring enough of the lights to the automobile plant to supply all needs until the train pulled in and the cars were placed on the spur at the automobile plant.

A newspaper plant in Texas had an accident to one of its presses. It was necessary to have the press repaired immediately as work was already being done on a special edition to be delivered the following Sunday. In the ordinary course of events, the part could not have been transported from the press factory to the newspaper plant in less than three or four days.

The newspaper publisher telephoned the manager of the printing press company explaining the situation. The manufacturer agreed to have the part at the newspaper plant the next day. He packed it immediately, chartered a plane, and the printing press was in operation the next day, or in less time after the accident than it would have taken to write the printing press manufacturer and have him receive the letter.

One of the most vital things in transportation is to be able to handle an emergency in a satisfactory manner. Motor trucks came into wide use during the World War because of their flexibility and the ease with which they could be used to meet emergencies. They have continued to be used partly because they meet a need that cannot be so well met by any other form of transportation, and partly because they fit into emergencies to such a satisfactory degree.

A gas company had been working on a prospective customer to persuade him to use gas heating. This prospect did not show any great degree of interest until one cold day when his heating plant broke down. He made a frantic call for repairs. He was assured that it would take several days to make them. As a last resort he telephoned the gas company and stated that if a gas heating plant could be installed within 24 hours or less he'd buy it.

The gas company was not prepared for such an emergency. It did not have in stock the boiler and the material needed at the installation. It telephoned until it found a company

All Aviation is invited to use the Curtiss-Wright Airports

Bettis Airport in Pittsburgh is the gateway between East and West Air Traffic

A nation-wide chain to provide facilities for the entire industry

THIS first nation-wide system of major airports in the United States is unified under Curtiss-Wright Airports Corporation ownership and management.

Each port is strategically located to business centers—and on the main highways of both present and future air travel.

Preferred space is for lease today on exceptional terms to transport companies, aerial photographers, railroads who will engage in air transportation, manufacturers of planes, of engines, supplies, accessories, fuel companies, and to all commercial operators and private plane owners. Only student instruction and local passenger carrying are reserved exclusively for the Curtiss-Wright Flying Service.

Among the leading aviation interests who have *already* leased space on Curtiss-Wright ports are: American Eagle Co., American Moth Distributors, Clifford Ball Airlines, Continental Air Express, Hodgkinson Aircraft Co., Irving Air Chute Co., Inc., Kinner Airplane Motor Co., Maddux Air Lines, Nevada Air Lines, Pennsylvania Air Lines, Pickwick Airways, Inc., Rio Grande Oil Co., Transcontinental Air Transport, Inc., Union Oil Company, Vortex Wing Corporation.

We will be glad to send detailed information about our present airport developments and future plans to executives.

Kindly write to Department P-1, Curtiss-Wright Airports Corporation, 27 West 57th Street, New York City.

Above — a typical Sunday aviation crowd at the Curtiss Chicago airport.

Left — these new modern hangars offer every facility for plane operation, accommodation, servicing and repairs. A noteworthy feature is the elevated promenade that allows aviation enthusiasts a comfortable, full view of all flying and field activities.

CURTISS-WRIGHT AIRPORTS

In New York Area: Valley Stream, L. I. · Caldwell, N. J. · North Beach, N. Y. C. · Hadley Field, N. J. · · Los Angeles, Cal.
In San Francisco Area: Alameda, San Mateo · · Houston, Texas · Milwaukee, Wis. · Chicago, Ill. · St. Louis, Mo.
Cleveland, Ohio · Pittsburgh, Pa. · Baltimore, Md.

which did have what was needed, and arranged to have the boiler and material rushed to the city on high speed motor vehicles and delivered at the prospect's house. Men to do the installing were ready when the truck arrived, and they worked continuously until the job was done. The gas company not only won a profitable customer but had a friend who has continued to boost for it ever since.

There is a steadily growing volume of business in emergency transportation. The airplane is handling some of this now. It will handle even more in the future because, being so fast, it will lead business men and individuals to rely upon such low stocks that emergencies more frequently may arrive. Airships most certainly will handle emergency shipments over longer distances than are now practicable for any other form of transportation. The express business is built up very largely upon these emergency shipments. Some of the goods shipped in this manner would not bear the rate charged except in an emergency. Others have to be shipped at a high rate of speed on account of their character.

On account of the vast area of this country and also on account of mass production, there is a growing demand for higher transportation speeds. In England and Europe, canal and river transportation is used to a much greater proportionate degree than in this country. Canals for which large sums of money were spent when they were developed scarcely serve sufficiently as a means of transportation to warrant their maintenance. Only the ship canals through which the largest ship afloat can pass really serve the purpose, because the small slow-moving boats on canals and small rivers are too slow. Many of the canals built and extensively used before the faster mode of moving goods by train came into vogue can scarcely be traced now as one examines the landscape.

A generation ago ox-teams were common sights on highways for hauling heavy loads to market or to the nearest railroad. Oxen gave place to horses, and now with improved highways not well suited to horses but admirable for motor vehicles, horses are disappearing as the motive power for transportation. They are not sufficiently fast, and with the high wages paid to labor and the shorter working day it is becoming actually cheaper to use the more expensive motor trucks even for relatively short hauls.

Ten years ago few if any motor trucks could be seen at many of our steamship docks. Today, conditions have changed so radically that the horse-drawn vehicle is dropping into the place formerly held by the motor truck and now is seldom seen.

Three-Way Transportation of 1929, All Rapid and As Safe As Fallible Human Beings Can Make Them.

Labor and the value of the goods determine the most economical speed of transportation. With high wages being paid and fewer hours worked, more and faster mechanical methods become economical even though with low wages and a longer working day they might be out of the question.

Every new and faster form of transportation finds its niche. As more and more machinery is used in production the necessity of faster transportation in its distribution becomes apparent. If the automobile industry had to depend upon ox-teams for sending new cars to dealers, the manufacturers would have to invest much more money in their businesses, and would have to charge materially higher prices for their cars. With fast freight service, the new cars pass in a steady and rapid stream to the distributors and dealers and through them to the users. The result of this relatively high speed in transportation is an extremely low cost of distribution and selling. There is no great accumulation of cars in the hands of manufacturers, distributors or dealers at any time. Everything is moving at a high rate of speed and this means a lower cost for doing business.

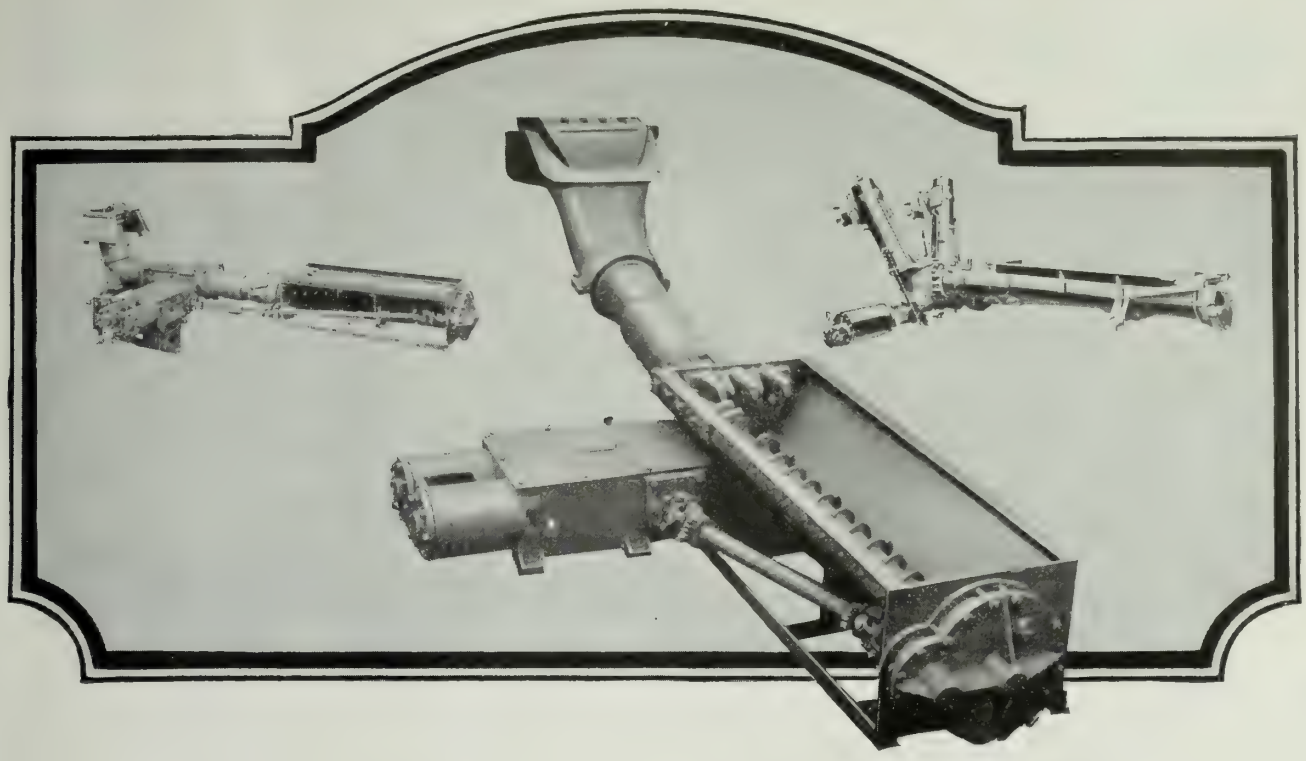
The depression of 1920 followed a period of the tie-up of our transportation systems after the war. Merchants found it so difficult to get goods that they ordered more than they needed. There were cancellations and failures. Plants shut down and buying power was reduced. Business fell into the doldrums, more because of the breakdown of transportation than for any other one thing. Too much money had been invested or rather dumped into lost transportation-time. Increased efficiency in railroading, the more general use of motor equipment, and airships have made this overstocked condition impossible.

How Germans Handle Bus Competition

An agreement has been entered into by the German railway and postal services with a view to eliminating the competition between buses and railways both in passenger and freight transportation. According to the new agreement the railway is to be interested in all bus lines opened since April 1, 1929, sharing to the amount of 33 1/3 per cent in profit and loss. In case a bus line is in direct competition with an existing railway line, the railway will share two-thirds and the postal service one-third. In both cases the two parties will mutually profit by the other's institutions such as waiting rooms, workshops, filling stations, etc. The railway is not to establish new rail lines and in return the postal service will not extend further its freight traffic.

The railways have witnessed during the past years a steadily decreasing freight traffic, and attribute this decrease entirely to the competitive truck traffic. The situation has been met by the railways by establishing a number of greatly reduced freight tariffs called K-Tarife (Kampf-Tarife, competitive tariffs) which provide a reduction of as high as 50 per cent below the ordinary freight rate. These tariffs are introduced separately, that is, made as the conditions necessitate.

The pomp of funerals is more on account of the vanity of the living than for the honor of the dead.—*La Rochefoucauld.*



◆ POWER ◆

WHAT the railroads want these times is power—not necessarily a large number of locomotives—but power, sustained power.

Stoker firing develops the full potential boiler capacity of the locomotive.

It gives this at the end of the run as well as at the start.

Regardless of locomotive size stoker firing assures maximum possible steaming capacity. Greater capacity than hand firing can give.

On any locomotive stoker firing increases sustained steaming capacity and sustained speeds. It means greater locomotive earning capacity.

The Standard Stoker Company, Inc.

New York Erie Chicago

R. F. Carr

Dearborn Chemical Co. Moves Again

THE NEED FOR chemical analysis of water before trying to correct troubles arising from the impurities it contained brought about the creation of the Dearborn Chemical Co. of Chicago. This took place in 1887 up to which time, strange to say, men worked very largely in the dark in their efforts to overcome the destructive tendencies of certain water, used in making steam. In the passing years the Dearborn organization has become known internationally through the efficiency and value of its research work. From an inconspicious beginning it has grown into a house employing hundreds of persons including a staff of chemical engineers from leading universities serving a large proportion of the power plants and railroads of the world in eradicating boiler water troubles. So successful has the company been in this work that three times in twenty years it was compelled to move into larger quarters. Now, once more, it has moved this time into a home with facilities more than double, it is said, those of any similar organization.

The most recent move took place last month into a new laboratory occupying an entire second floor of Building No. 2. This comprises a main laboratory, eight smaller private or classified laboratory rooms, a receiving room, storeroom, three offices and a library. The main laboratory is approximately about 50 by 100 feet. Its walls are tiled in two shades of green, the ceiling is cement plastered and painted, as is all the wood work, in a cream color, covered with a fume-proof enamel or varnish. There are two hoods, one for routine use, tiled inside and out. The floors are of a terra cotta vitreous tile. There are eight single working tables, in addition to those that line the walls. These are all alberene stone-topped. The table for volumetric work is lighted above and below by daylight lamps, in the latter case, through frosted glass insets in the table top. A huge enameled metal case fills about one-third of one of the long wall spaces for storing chemicals and glassware. The tables devoted to the work of water analysis are covered with individual hoods which are tied into a ventilating system.

The chief executives of the Dearborn Chemical Company are: Robert F. Carr, president; George R. Carr, vice president and general manager; E. C. Brown, vice president and eastern manager; W. A. Converse, secretary; F. L. Baker, treasurer; J. W. Brashears, director of purchases and manufacturing; E. M. Converse, sales manager, D. K. French, chemical director.

Robert F. Carr, president, was born at Argenta, Ill., November 21, 1871. After his graduation from the University of Illinois in 1893, he moved to Chicago and became connected with the Dearborn Chemical Co. the next year. He is a director of the Continental Illinois Bank & Trust Co., and of Wilson & Co., Chicago. He belongs to numerous influential clubs.

George R. Carr

Mr. Carr served in 1918 as major on the general staff, purchase, storage and traffic division, under General Goethals, engaged in the work of revising and standardizing specifications for general army commodities.

George R. Carr, vice president and general manager, was born at Argenta, Ill., also, January 23, 1877. He, too, was graduated from the University of Illinois, in 1901 as a B. S., and joined the Dearborn Chemical Company immediately afterward. He is chairman of the board of the Locomotive Firebox Co., and director of the National Bank of the Republic and of Chapman & Grannis Co. He belongs to clubs in various cities.

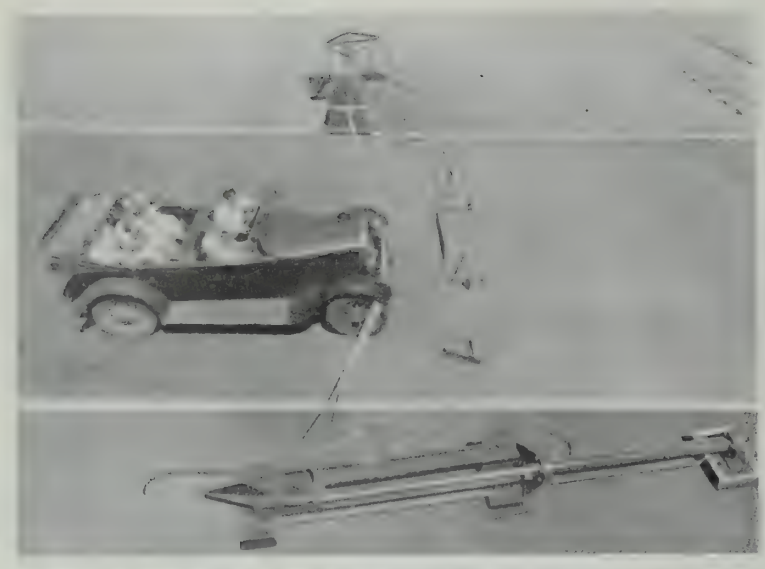
The Dearborn Chemical Company's New Laboratories.

RALSTON BUILT
STEEL CARS HAVE
MAXIMUM CAPACITY
AND
MINIMUM WEIGHT

Wine Type Hopper Car Built for the Atchison, Topeka & Santa Fe Ry.
Capacity 140,000. Load Limit 158,000. Cu. Ft. Capacity 2,716. Light Weight 52,000

RALSTON facilities aided by skilled workmen, competent engineers and proper supervision, maintain a well balanced program keeping the cars moving through our plant on regular schedule. We are prepared to completely rebuild steel cars in record time. We have done it for others—Ask us for the figures.

THE RALSTON STEEL CAR COMPANY
COLUMBUS, OHIO



The Security Highway Barrier at Moment of Contact With Car. Wire Ropes Have Even Bearing Against the Car.

A Highway Barrier That Stops a Car

IN THE DAYS of horse-drawn vehicles, and what we now would call funeral speeds, there weren't many grade crossing accidents, comparatively speaking. You seldom heard of a wagon-load of happy young people returning from a dance or a party in the country being pitched violently into eternity.

But now, as in other departments of life, traffic on the highways has increased enormously, and no day passes without its tragedy. Traffic accidents and their prevention have become a national problem. With 27,000,000 motorists on our roads the public clamor for grade elimination has become so persistent that the railroads and the tax payers are faced with the expenditure of hundreds of millions of dollars if the most urgent demands are met. With the continual increase in crossing accidents this demand grows more aggressive. Yet, what with the rapid highway expansion of the country, in spite of the railroad activity in grade crossing elimination, three times as many crossings were constructed last year as were eliminated.

Elimination of grade crossings on an adequate scale is impracticable, yet the demand for safety is immediate and insistent. We cannot side-step the grade crossing problem. We must meet the challenge of the changed conditions surrounding it. How can this be done?

No student of the present situation can fail to be impressed by the increase in accidents at grade crossings, due to inadequacy of many of the present protective devices. Safety devices for the control and protection of traffic have, in general, lagged far behind the demands imposed by modern traffic conditions. Up to the present time the generally accepted form of protection has been the common type of railway signal gate, supplemented by lights or bells. The crossing gate is nothing but a visual warning in the middle of the street. The fact that it spans the roadway and in order to pass it, it must be pushed aside or broken, may mean that it is a distinct kind of visual warning. But these gates are effective, as their name implies, only as signals. They are themselves incapable of retarding the movement of a vehicle toward the point of danger.

What may be a solution of the problem has come from the ingenious conception of Joseph Strauss, eminent consulting engineer, the Yielding Barrier. The fundamental idea consists of interposing a flexible barrier between the oncoming vehicle and the danger it faces. This barrier offers a resistance to the vehicle and brings it to a gradual stop without injury to the vehicle or its occupants.

The Security Highway Barrier is the realization of the Strauss idea. Vehicles cannot crash through it. It has power to bring them to a dead stop before they reach the rails. If the driver fails to halt his vehicle in the face of danger, the barrier will halt it for him. The result of the addition of the "positive stop" feature is therefore to make safety as regards collision of vehicle with train independent of either the driver's receipt of warning or his actions. The barriers will cacomplish the results for which crossing elimination is now demanded but at a fraction of the cost. With only a part of the funds now authorized for crossing elimination so many more Security Highway Barriers could be erected that the net result would be vastly improved protection, considering the highways of the country as a whole. The Security Highway Barrier is a product of the Franklin Railway Supply Co., 17 East 42nd street, New York.

The Barrier Raised. It Is Lowered Automatically When a Vehicle Approaches.

The dots on this map show the hundreds of places where we have done engineering or construction work. They are an indication of our wide knowledge of labor and material markets and long experience in building under the varying conditions obtaining in different sections of the United States and other parts of the world.

World-wide construction experience

.... represented by a billion dollars worth of work

THE example of President Hoover in pushing the immediate construction of great public works is being followed by manufacturers, railroads, public utilities and institutions everywhere.

New facilities—shops, factory extensions, railway terminals, power developments, electrification, foreign branch plants—are being immediately projected.

In connection with this national building program the services of this company are available to American industry.

Our experience is indicated by a billion dollars worth of work performed for 1200 clients located in practically every state in the Union, seven Canadian provinces and 12 foreign countries.

Through our offices strategically placed in five principal cities in this country and through our three foreign companies we are prepared to handle construction undertakings anywhere in the world.

UNITED ENGINEERS & CONSTRUCTORS, INC

combining

The U. G. I. Contracting Co.
Public Service Production Co.
Dwight P. Robinson & Co., Inc.
Day & Zimmermann Engineering & Construction Co.
United Engineers & Constructors (Canada) Ltd.
Dwight P. Robinson & Company of Argentina, Inc.
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Specialists in the design and construction of

Industrial Plants, Steam Power Stations, Hydro-Electric Developments, Railroad Work, Gas Plants. *Construction of* Apartments, Hotels, Office Buildings.

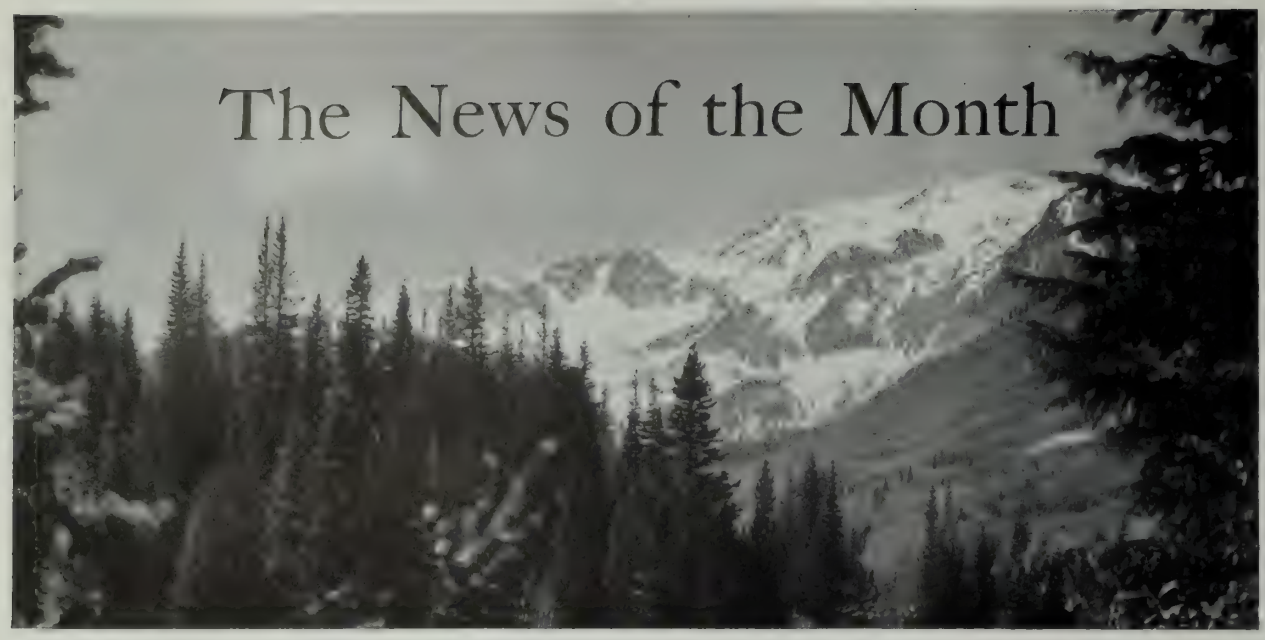
UNITED ENGINEERS & CONSTRUCTORS

INCORPORATED

DWIGHT P. ROBINSON, PRESIDENT

PHILADELPHIA NEW YORK NEWARK CHICAGO
LOS ANGELES BUENOS AIRES RIO DE JANEIRO MONTREAL

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED



The News of the Month

CLASS I railroads in the first eleven months of 1929 had a net railway operating income of $1,201,172,558, which was at the annual rate of return of 5.04 per cent on their property investment, according to reports just filed by the carriers with the Bureau of Railway Economics. In the first eleven months of 1928, their net railway operating income was $1,099,823,573 or 4.68 per cent on their property investment. This compilation as to earnings for the eleven months of 1929 is based on reports from 180 Class I railroads representing a total of 241,597 miles.

Gross operating revenues for the first eleven months in 1929 totaled $5,882,985,157 compared with $5,692,846,075 for the same period last year, an increase of 3.3 per cent. Operating expenses for the first eleven months amounted to $4,190,869,790 compared with $4,123,449,957 for the same period a year ago, an increase of 1.6 per cent.

In the first eleven months of 1929 the roads paid $397,428,893 in taxes, compared with $360,585,613 for the same period in 1928. For November alone, the tax bill was $30,000,218, a decrease of $4,203,564 under the previous year.

Twenty-seven Class I roads operated at a loss in the first eleven months of 1929, of which eleven were in the eastern, four in the southern and twelve in the western district.

Class I railroads for November had a net railway operating income of $86,669,467, which, for that month, was at the annual rate of return of 3.64 per cent on their property investment. In November, 1928, their net railway operating income was $113,520,063, or 4.84 per cent. Gross operating revenues for November amounted to $499,210,861 compared with $532,055,881 in November, 1928, a decrease of 6.2 per cent. Operating expenses in November totaled $372,167,148, compared with $374,861,114 for the same month in 1928, a decrease of seven-tenths of one per cent.

Frank McManamy is I.C.C. Chairman

Frank McManamy was elected chairman of the Interstate Commerce Commission for 1930, succeeding Commissioner Ernest I. Lewis. The chairmanship rotates from year to year.

S. P. Names Tredway Advertising Head

The appointment of F. Q. Tredway as general advertising agent of the Southern Pacific with headquarters in San Francisco, is announced by E. W. Clapp, general passenger traffic manager. Following a varied newspaper experience on the Pacific Coast, Mr. Tredway entered the employ of the railroad as associate editor of its news bureau. Later he was appointed editor of the bureau, and then assistant manager of development and colonization. In July, 1928, he was transferred to the position of assistant general advertising agent.

Tredway attended the University of California and left there for overseas service in the aviation corps. Following the armistice he entered newspaper work and began work for the Southern Pacific in 1921.

Two Millions for Cab Signal Control

The directors of the Pennsylvania Railroad have authorized the expenditure of about $2,000,000 for further installation of cab signals. The work just authorized is in addition to more than $16,000,000 for improvements in automatic signal installations the Pennsylvania Railroad plans to complete this year.

When contemplated projects and new installations have been completed, the entire main line of the railroad from New York, Philadelphia, Baltimore and Washington to Pittsburgh and Indianapolis will be operated under continuous cab signal control. Under this system the wayside signals are reproduced in the cab before the eyes of the engineman and fireman and are operated with a loud warning whistle and "acknowledger" which require the engine crew to act upon any less favorable indication of the signals ahead of the train they are operating.

Revenue Loads in 1929 52,789,789 Cars

Complete reports for the year show that 52,789,789 cars were loaded with revenue freight in 1929, the car service division of the American Railway Association announced January 8. This was the largest number of cars loaded with revenue freight on record, except for 1926, when there were 53,098,819 cars, an increase of 309,030 or .6 per cent above the total for 1929.

Freight traffic during the past year showed an increase of 1,199,902 cars, or 2.3 per cent above 1928, and an increase of 1,153,983 cars or 2.2 per cent above 1927.

The heavy movement of freight in 1929 was handled with the greatest efficiency ever reported by the railroad

AUTOMATIC CONNECTORS

A few years ago the coupling of train pipe hose automatically was generally looked upon as but an alluring theory. Today there is scarcely a railroad executive in the country who does not regard it as a very important development in economical train operation.

THE ROBINSON AUTOMATIC CONNECTOR has been largely responsible for this change of view.

Let us clear up any doubts which you may have as to the practicability of Automatic connection of train pipe hose and give you a clear and concise idea of the ROBINSON AUTOMATIC CONNECTOR and its impressive savings.

ROBINSON AUTOMATIC CONNECTOR

415 Lexington Avenue
New York

"Building Automatic Connectors is our exclusive business"

systems of this country. Not only were fewer trains and locomotives required, in proportion to the amount of traffic handled, but the average load per train was higher and freight shipments were moved with the greatest promptness ever attained by the railroads.

Loading of revenue freight exceeded one million cars in 28 separate weeks in 1929 compared with 24 weeks in 1928. In 1927 there were also 28 weeks in which loading exceeded one million cars. Total loadings by commodities for 1929 compared with 1928 follow:

	1929	1928
Grain and grain products	2,394,459	2,512,937
Live stock	1,418,949	1,520,915
Coal	9,232,429	8,768,487
Coke	627,546	533,716
Forest products	3,250,794	3,327,270
Ore	2,281,288	1,909,766
Merchandise less than carload	13,200,440	13,165,573
Miscellaneous freight	20,383,884	19,851,223

Railway Construction

Buildings & Structures

CALIFORNIA. — Los Angeles. The Los Angeles & Salt Lake has let a contract to the Lynch Construction Co. for a one and two story brick and steel freight unit here, to cost about $288,000.

COLORADO.—Denver. The Burlington and the Colorado & Southern are planning an addition to the locomotive terminal at 23rd street to cost $100,000.

KANSAS.—Atchison. The Roberts & Schaefer Co., Chicago, has a contract from the Missouri Pacific for a multiple-track N. & W. type electric cinder handling plant.

MISSOURI.—Kansas City. The Missouri Pacific is planning to build a locomotive terminal and shops near Topping and Nicholson avenues, to cost about $750,000.

MONTANA.—Butte. The Great Northern is planning a new freight station between Arizona and Utah streets, to cost about $200,000.

OHIO.—Dayton. The H. R. Blagg Co. has a contract from the Pennsylvania for a one and two story reinforced concrete brick and steel freight station here, to cost about $225,000.

PENNSYLVANIA. — Pottstown. The Roberts & Schaefer Co., Chicago, has a contract from the Reading Company to build an N. & W. type electric cinder plant.

TEXAS.—Cleburne. The Gulf, Colorado & Santa Fe is receiving bids for several storehouse and warehouse units.

Locomotive Orders

In the leading article in this issue Commissioner Ernest I. Lewis says, "The number of steam locomotives was 5,631 less in 1928 than in 1920, but the average tractive power increased in that period from 36,365 pounds to 43,838, an increase of over 20 per cent. This means that many small, obsolete locomotives have been replaced by modern and more powerful ones."

Throughout the issue many railroad executives give interesting data on what has been accomplished in operating results in recent years by the substitution of new and heavier power. All of this is fine. It is in the order of regular development, but still locomotive purchases during the past two years have not been out of the ordinary, and have not kept pace with the improvement in design of the locomotive or the possibilities which the operating results should warrant.

There seems to be too great a tendency on the part of many officials to stress only the increased size of the locomotive. One of the real achievements of the locomotive designer in recent years has been his ability to increase the capacity of the engine without materially increasing either its size or weight.

With operating results showing more clearly all the time the wisdom of the earlier retirement of obsolete power, and with the possibilities which the switching and secondary powers afford for modernization and replacement, we feel that during the next few years purchases of new power will be larger than in the past.

Locomotive orders in 1929 showed a decided improvement over 1928 but that year was one of the poorest on record. We estimate from our records that in 1929 a total of about 890 honest-to-goodness steam locomotives were ordered from the three largest builders for use in the United States; that 136 engines were ordered from the railroads' own shops in this country; that 76 were ordered in Canada, and 80 ordered for export. This makes a grand total of 1182 steam locomotives.

In addition, a total of about 91 oil-electric and gasoline engines of various types and sizes were ordered for use in this country and export, and 107 electric engines of various types.

The A. R. A. reports that 716 locomotives were placed in service by the major roads of the country during the eleven months of 1929, and that these roads had 299 engines on order on December 1 as compared with 123 on the same day in 1928, and 69 in 1927.

The Chesapeake & Ohio includes 25 freight locomotives, 50 switchers and 40 large tenders in its budget for 1930; the Hocking Valley, 25 freight and 15 switchers; Pere Marquette, 15 switchers and 15 large tenders; Louisville & Nashville, six passenger locomotives. The International Railways of Central America is inquiring for three 2-8-2 type; Union Railroad, one locomotive. The St. Louis Southwestern is now reported to be inquiring for 25 locomotives instead of 10 as previously reported. The Union Pacific is said to be preparing specifications for 25 passenger locomotives, and the Milwaukee probably will be in the market for from 15 to 20 locomotives.

Baldwin received the following orders: Bessemer & Lake Erie, nine 2-10-4 type; Burlington, 12 4-6-4 type and eight 4-8-4 type; Southern Pacific, 25 Mallets and 14 4-8-4 type; Wabash, 25 4-8-4 type; American Bridge Co., one switcher; Santa Fe, one 2-10-4 type; Belt Railway of Chicago, five 0-8-0 type. Lima received orders from the Chicago Great Western for 15 2-10-4 type and the Missouri Pacific for 25 2-8-4 type. American received an order from the Missouri Pacific for five 4-8-2 type. The Canadian National ordered 12 4-8-2 type from the Montreal Locomotive Works, 18 2-10-2 type from the Canadian Locomotive Co., and 10 switchers from its own shops.

Passenger Car Orders

With passenger travel still materially declining orders during the past eight years for new passenger equipment are an outstanding feature in American railroading. Greater comfort, greater luxury, is the railroads' method of meeting automobile competition. Read what Edward Hungerford has to say in this issue about the New York Central and how that road has been improving its passenger equipment and accomplishing results.

Look for Comfort

ONE has only to look around with a penetrating eye to know that comfort is being sold.

How does the successful hotel attract steady patronage? Why are theatres so luxurious? What appeals most to people when riding in motor cars? Why has deeply upholstered furniture displaced the old-fashioned straight back chair and haircloth sofa?

The answer is "comfort." People look for comfort. They pay to be comfortable. It pays to make them comfortable.

Comfort is a commodity that is building increased patronage for many a progressive railroad. The foundation of riding comfort is a seat that is really restful.

HALE & KILBURN SEATS

"A BETTER SEAT FOR EVERY TYPE OF MODERN TRANSPORTATION"

HALE & KILBURN CO.

General Office and Works: 1800 Lehigh Avenue, Philadelphia

SALES OFFICES:

Hale & Kilburn Co., Graybar Bldg., New York
Hale & Kilburn Co., McCormick Bldg., Chicago
E. A. Thornwell, Candler Bldg., Atlanta
Frank F. Bodler, 903 Monadnock Bldg., San Francisco
W. L. Jefferies, Jr., Mutual Bldg., Richmond
W. D. Jenkins, Praetorian Bldg., Dallas, Texas
H. M. Euler, 146 N. Sixth St., Portland, Oregon

Our records show a total of 3639 passenger service cars of various types ordered in the United States and Canada during 1929. Fifty-six cars were built in this country for export and 244 were ordered for roads in Canada. Of the 3339 ordered for roads in the United States, 921 were for street car and interurban electric lines, 154 were multiple unit cars, 122 were self-propelled rail motor cars, 16 were trailers and the remainder, 2126, were for steam train operation. These latter were divided by types as follows: sleepers, 497; coaches, smokers, etc., 420; baggage, mail, express, express refrigerators, etc., 1036; observation, cafe, etc., 97; diners, 76.

Orders for passenger cars placed since the December issue of *Transportation* include the following: Missouri Pacific, four dining cars from American Car & Fdy. Co.; Northern Pacific, nine dining cars from Pullman; Frisco, three dining cars from Pullman; Southern, 22 mail and baggage and one postal car from Bethlehem Steel Co.; Wabash, three baggage and mail cars from American Car & Fdy. Co.; International Railways of Central America, one combination passenger and baggage gasoline rail motor car and one passenger trailer from J. G. Brill Co.; Reading, one combination passenger, baggage and mail gas-electric car from J. G. Brill Co.; Canadian National, 20 baggage and 15 express refrigerator cars from National Steel Car Corpn.

The Burlington is inquiring for ten gas-electric cars; Rock Island, ten coaches; Missouri-Kansas-Texas, three dining cars; Southern Pacific, ten baggage, five dining and five lounge cars; International Railways of Central America, five first class coaches, seven second class coaches and three baggage cars; Canadian National, six compartment sleepers, 12 lounge cars and five dining cars. Passenger cars included in budgets for 1930 are as follows: Chesapeake & Ohio, 20 passenger and baggage, 41 passenger, and six mail and express cars; Hocking Valley, four passenger cars; Pere Marquette, eight passenger and 12 baggage and express cars; Louisville & Nashville, three dining, four passenger and baggage, four coaches, two baggage and mail and ten baggage cars. It is reported that the Chicago & North Western will buy 200 suburban coaches this year.

Freight Car Orders

There are many bright spots for the freight car builders and equipment men in the figures for 1929. Foremost among these is the decline in the percentage of freight cars built by the railroads in their own shops as compared to the year's total orders. In 1928 more than 18 per cent of cars ordered were built in the companies' own shops. In 1929 the percentage declined more than one-half to around 9 per cent. At the same time it must be admitted our records show about the same number of cars constructed by companies' forces. The percentage reduction is based on the greater number of cars ordered from the contract builders. Perhaps as time goes on the executives and car men are finding less personal glorification in attempting to build their own cars, or possibly more careful and correct accounting methods and studies are developing the fact that the specialist should be able to build better cars at lower costs than the railroad whose primary business is transportation rather than manufacturing.

In another article in this issue Commissioner Lewis says "The possibility of reducing unnecessary empty freight car hauls is one of the opportunities for economy perhaps not yet fully exploited by the railway managers." There is no doubt that the tendency to reduce the number of freight car units during the last few years has increased materially the empty car mileage, and greater attention will be given no doubt in the future to the wisdom and economics of this problem.

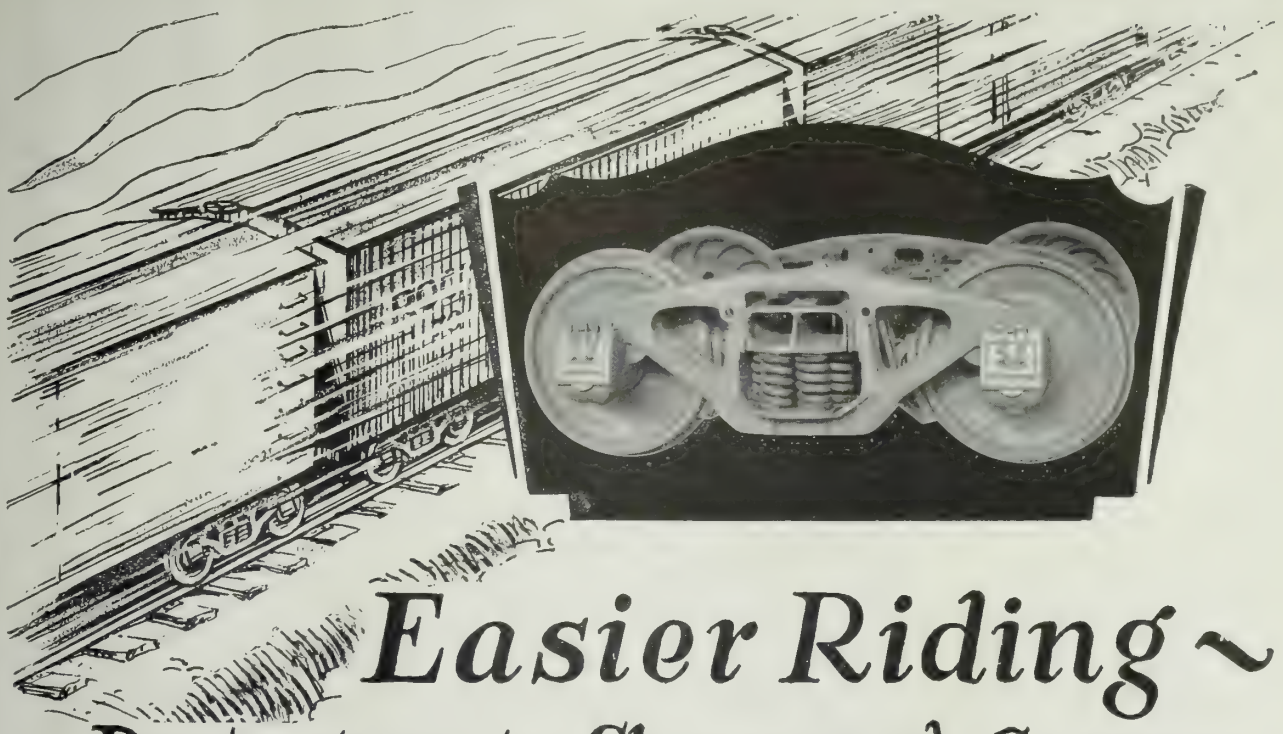
Freight car buying during 1929 was very materially improved. The A.R.A.

JORDAN SPREADER
"Does the Work of an Army of Men"
SNOW PLOW ★ ICE CUTTER
UNIVERSALLY
STANDARD
DITCHER
O. F. JORDAN COMPANY
WALTER J. RILEY, PRESIDENT
EAST CHICAGO, INDIANA

JORDAN
SPREADER - DITCHER

Indispensable in mines, on railways, public works, industrial plants, etc.

Built in Standard and Narrow Gauge Sizes



Easier Riding ~ Protection to Shipper and Carrier

Bettendorf-Dalman "One Level" Trucks go a long way toward smoothing out the "rough spots" encountered in present-day freight handling. Their design is such as to maintain resiliency under heavy loads and road shocks, thereby insuring the *easy riding* qualities so necessary where fast train schedules prevail. Continuous car service and adequate protection to the shipper's commodity while in transit is thus provided.

High speed freight handling can return maximum profits only when the equipment is designed for that type of service. In this connection, Bettendorf-Dalman "One Level" Trucks leave nothing to be desired.

Greater safety to the lading is achieved by a reserve spring capacity more than ample to withstand the heaviest kind of service without the hazard of spring breakage.

The Dalman Feature Adds Two Standard Coils to Each Spring Group

THE BETTENDORF COMPANY

OFFICES AND WORKS BETTENDORF, IOWA

says that on December 1 the leading roads of the country had 30,569 freight cars on order which is an increase of 10,194 cars over the same date in 1928, and an increase of 20,719 over 1927. Orders placed in 1929 were nearly double those placed in 1928, and our records show ran well in excess of the 100,000 mark which has not been reached since 1924 when the total orders placed came close to 150,000.

We estimate there were 115,184 freight cars of all types ordered to be built in the United States during 1929; 112,151 of these were for use in the states and 3,033 were for export. In addition to this 10,699 cars were ordered in Canada. This makes a grand total for the United States and Canada of 125,883 compared with 64,591 in 1928.

The Louisville & Nashville is inquiring for 750 gondolas, 300 hoppers, 500 box and 250 flat cars; Seaboard Air Line, 1000 box cars; Bangor & Aroostook, 2000 underframes and superstructures for box cars; Jamaica Government Railway, 40 box cars. The Chesapeake & Ohio includes the following in its budget for 1930; 2000 box cars, 1500 gondolas and 1500 hoppers; Hocking Valley, 1500 gondolas; Pere Marquette, 1500 box, 2250 automobile, 1000 gondolas, 100 flat and 25 caboose cars.

The Missouri Pacific ordered 625 box cars from Mt. Vernon Car Co., 625 box cars and 35 cabooses from American Car & Fdy. Co.; Reading, 400 box cars from Pressed Steel Car Co., 400 box cars from Standard Steel Car Co., 600 box cars from American Car & Fdy. Co., 600 box cars from Bethlehem Steel Co.; Union Tank Car Co., 60 tank cars from General American Tank Car Corpn.; Birmingham Southern, 25 box cars from Pullman; Illinois Terminal, 50 underframes from American Car & Fdy. Co. The Canadian National ordered 2250 box cars and 25 tank cars from Canadian Car & Fdy. Co., 1175 box cars from National Steel Car Corpn., 1000 box cars and 200 refrigerator cars from Eastern Car Co. The Missouri-Kansas-Texas will build 500 coal cars in its shops at Denison, Texas.

Changes in Personnel

Executive & Operating

John R. Turney of Carter, Jones & Turney, St. Louis, general solicitors of the St. Louis-Southwestern, has been elected vice president in charge of traffic and law with headquarters at St. Louis and Tyler, Texas. **J. D. Watson**, general traffic manager, has been appointed assistant to the president at St. Louis, acting as the personal representative of the president in Missouri, Arkansas and Louisiana. **John F. Lehane**, vice president in charge of traffic of the Texas Lines, at Tyler, will now act as the personal representative of the president in Texas, with headquarters at Fort Worth. Other appointments are: **Kirby M. Post**, assistant to the president, with headquarters at St. Louis; **H. S. Phillips**, superintendent of the Texas Lines, with headquarters at Tyler; **J. W. McColgan**, superintendent of personnel, with headquarters at Tyler; **L. E. Hoffman**, inspector of operation, with headquarters at Pine Bluff. The offices of the superintendent of safety and train rules examiner have been abolished.

Joseph H. Nuelle, vice president and manager of the New York, Ontario & Western, has been elected president to succeed **John B. Kerr**, retired. **Arthur**

FROM HERE TO THERE

There is a time and place for everything. An article attains its highest value and greatest usefulness when it is in the right place at the right time.

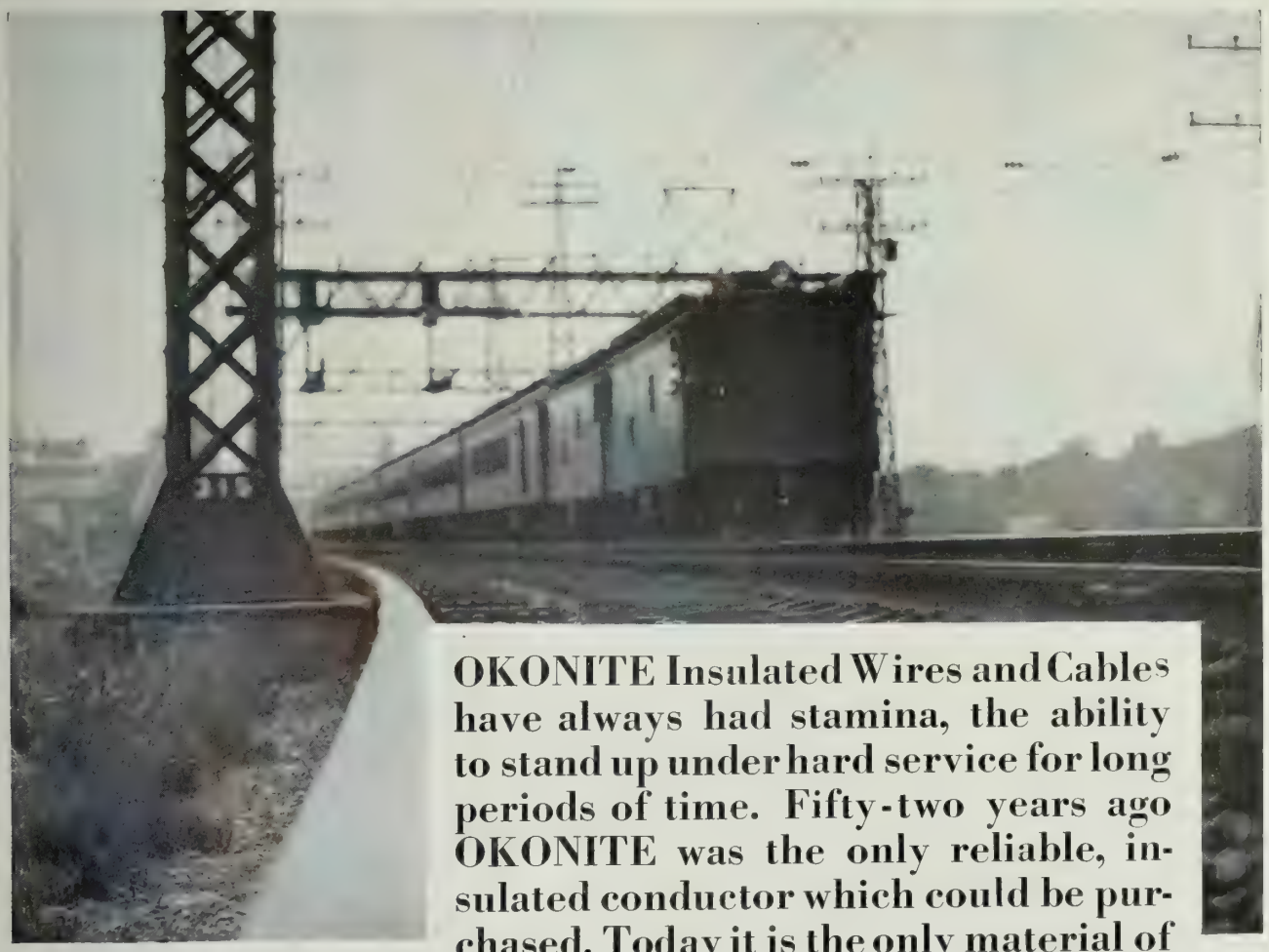
America's efficiency and prosperity is based largely on the fact that its people, regardless in what field of activity, can have at any time or any place the things they need or want.

The demand for things whether it be a crate of lettuce or a steel beam is economically served by the railroads which transport things from here, where they are grown or manufactured, to there, where they have their greatest time and place value.

Of all the methods of transportation, the railroads are by far the most important. The zone of every kind of production is extended by the low cost and high speed of transporting things from a place of uselessness to a point at which they have their greatest time and place value.

SOUTHERN PACIFIC

STAMINA •• *the outstanding Requirement*



OKONITE Insulated Wires and Cables have always had stamina, the ability to stand up under hard service for long periods of time. Fifty-two years ago OKONITE was the only reliable, insulated conductor which could be purchased. Today it is the only material of its kind with a proven history of a half century of perfect service. Wires and Cables installed more than half century ago are still in use and are good for an indefinite period of additional service.

Stamina such as that ought to earn widespread approval from railroad men. Ever-increasing purchases of OKONITE for railroad use indicate that it does.

Okonite Products
OKONITE INSULATED WIRES AND CABLES
VARNISHED CAMBRIC CABLES
OKONITE INSULATING TAPE
MANSON FRICTION TAPE
OKONITE CEMENT
OKOCORD
OKOLOOM

Okonite-Callender Products
IMPREGNATED PAPER CABLES
SUPER-TENSION CABLES
SPLICING MATERIALS

THE OKONITE COMPANY
Founded 1878

THE OKONITE-CALLENDER CABLE COMPANY, INC.
Factories: Passaic, N. J. Paterson, N. J.

SALES OFFICES
NEW YORK CHICAGO SAN FRANCISCO PITTSBURGH LOS ANGELES ST. LOUIS SEATTLE ATLANTA DALLAS BIRMINGHAM

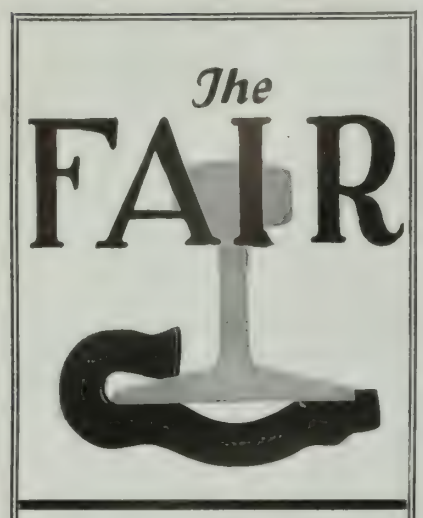
General Electric Supply Corp., Boston, Mass.

Novelty Electric Co., Philadelphia, Pa.
F. D. Lawrence Electric Co., Cincinnati, O.

Canadian Representatives:
Engineering Materials, Limited, Montreal

Cuban Representatives:
Victor G. Mendoza Co., Havana

OKONITE QUALITY CANNOT BE WRITTEN INTO A SPECIFICATION



The FAIR Rail Anti Creeper

Satisfactory Under All Conditions

THE P. & M. CO.

Chicago New York
Montreal London Paris
Calcutta Sydney

L. Parmelee, assistant treasurer, has been appointed treasurer, and **Charles E. Simmons** has been appointed secretary, succeeding **R. D. Rickard,** vice president, secretary and treasurer, retired.

J. W. Smith, general manager of the Boston & Maine, has been appointed vice president and general manager of that road. Mr. Smith's appointment became effective January 1. It gives him jurisdiction over the transportation and mechanical departments. Mr. Smith is 50 years old, the son of a railroad track

J. W. Smith

supervisor. He grew up on the railroads of the Middle West. He joined the Boston & Maine on August 16, 1927, as assistant to the president.

F. W. Paine, treasurer of the Copper Range, has been elected president, with headquarters at Boston, succeeding **William A. Paine,** deceased.

John Duffy, assistant to the president of the Lehigh Valley at New York, has been elected vice president in charge of traffic, with the same headquarters, succeeding **J. A. Middleton,** deceased. **H. R. German,** assistant secretary, has been appointed assistant to the president.

The jurisdiction of **A. C. Mann,** vice president of the Illinois Central in charge of purchases and stores, has been extended to include the testing department, formerly under the jurisdiction of the mechanical department. **J. L. Carver,** engineer of tests, with headquarters at Burnside Shops, Chicago, is in charge of this department. **J. F. Riordan,** supervising agent of the Wisconsin division, has been appointed superintendent of stations and transfers, with headquarters at Chicago, succeeding **C. G. Richmand,** deceased.

Frank R. Pechin, vice president in charge of operation of the Omaha, retired from active service January 1. **Carl R. Gray, Jr.,** general manager, has been appointed vice president and general manager, with headquarters as before at St. Paul.

George E. Fuller has been appointed executive general agent of the Alabama, Tennessee & Northern, with headquarters at Mobile.

B. F. Johnston and **H. F. Jones,** president and vice president of the Mexican Pacific, respectively, have also been elected to the same positions on the Orient, with headquarters at Los Mochis, Sin. **L. R. Hoard,** vice president and general manager of the Mexico North Western, has also been elected vice president of the Orient, with headquarters at Cuidad Juarez, Chih., and El Paso. **C. M. Newman** has been elected vice president with headquarters at El Paso. **G. H. Bussing,** general superintendent of the Mexico North Western at Cuidad Juarez, has also been appointed general superintendent of the Chihuahua and Mountain divisions of the Orient.

The Pennsylvania announces that **R. C. Morse,** general superintendent, New York zone, has been promoted to assistant general manager, New York zone, with headquarters in New York City.

The Burlington announces that **C. D. Peckenbaugh,** general superintendent of the Missouri district, has been appointed general superintendent of the Illinois district, with headquarters at Galesburg, succeeding **J. H. Aydelott,** who has been appointed general manager of the Fort Worth and Denver City Railway Co. **J. D. Farrington** succeeds Mr. Peckenbaugh as general superintendent of the Missouri district at St. Louis. **H. D. Brown** has been appointed superintendent of the Aurora division, with headquarters at Aurora; **S. L. Fee** has been appointed superintendent of the La Crosse division with headquarters at Grand Crossing, Wis.; **H. J. Hoglund** has been appointed division superintendent of the Alliance division, with headquarters at Alliance. **F. E. Sinkey** has been appointed acting train rules examiner, with headquarters at Omaha. **W. A. Chittenden** has been granted leave of absence on account of illness.

L. L. Lowe, roadmaster on the Missouri Pacific at Batesville, has been appointed superintendent of the New Orleans & Lower Coast with headquarters at Algiers, La.

Financial & Legal

The Southern Pacific announces that **Ben C. Dey** has been appointed general counsel for Southern Pacific Lines,

AMERICAN
AUTOMATIC TRAIN PIPE
CONNECTORS

ARE NOT AN EXPERIMENT

They are SAVING TIME and MONEY and PREVENTING ACCIDENTS on the roads where they are in regular service

They are NOW and HAVE BEEN for MANY YEARS in actual service on AMERICAN railroads under the most exacting conditions.

ASK US FOR DETAILS

The CONSOLIDATED CONNECTOR CORPORATION

118 Noble Court

CLEVELAND, OHIO

CONLEY

Solid Manganese

Self Guarded

SPRING FROGS

SHOWING SPRING FROG IN SERVICE

Are giving excellent service under severe traffic conditions on Railroads using them.

Twenty years successful service by CONLEY TYPE FROGS have demonstrated their merit for safe and economical service.

CONLEY FROG & SWITCH CO.

Memphis, Tenn.

with headquarters in New York City, to succeed **J. P. Blair**, who will retire from active service after nearly 38 years' continuous service in the law department of the Southern Pacific Lines. **A. A. Hampson** has been appointed general attorney in Oregon, with headquarters in Portland, to succeed Mr. Dey.

The St. Louis Southwestern announces that **A. R. Wood** has been appointed treasurer, secretary, and auditor, with headquarters at Tyler, Texas, to succeed **J. W. Hogan**, resigned. **M. G. Mitchell** has been appointed auditor disbursements, with headquarters at Tyler. **H. P. Taylor** having resigned, the position of assistant auditor has been abolished.

E. E. Bennett, assistant general attorney of the Los Angeles & Salt Lake in California, has been appointed general attorney in that state, with headquarters at Los Angeles, succeeding **Fred E. Pettit, Jr.**, resigned.

Frederick T. Harward has been appointed general attorney of the Grand Trunk Western, with headquarters at Detroit, to succeed **H. R. Martin**, resigned.

Purchases & Stores

E. R. Morganroth has been appointed purchasing agent of the Pacific Coast Railroad and the Pacific Coast Railway, with headquarters at Seattle, to succeed **W. E. Nichols**, retired.

C. A. Draper, purchasing agent of the New York, Ontario & Western, has retired.

Traffic

Archer W. Miller, division passenger agent of the Baltimore & Ohio, with headquarters at Toledo, has been appointed general eastern passenger agent, with headquarters at New York, succeeding **J. B. Scott**, deceased. **C. A. Schultz**, commercial freight agent at New York, has been appointed district freight representative with headquarters at Newark, N. J., succeeding **Charles S. Stout. G. J. Redden** succeeds Mr. Schultz as commercial freight agent at New York. **Walter F. Emde** has been appointed district freight agent, with headquarters at New York, to succeed **H. C. Couse.**

William A. Shackelford, district passenger representative of the Canadian Pacific at Boston, has been appointed general agent of the passenger department at Pittsburgh, to succeed **Clarence L. Williams**, retired.

The Union Pacific announces that **E. A. Klippel, Jr.**, general agent, passenger department at Portland, has been appointed assistant general passenger agent, with the same headquarters. **Burten Beck** succeeds Mr. Klippel as general agent. **J. C. Cumming**, general baggage agent at Portland, has been appointed assistant general passenger agent at the same point, to succeed **A. C. Martin**, retired. **F. H. Huesman** has been appointed assistant general freight agent at Los Angeles, succeeding **J. P. Quigley**, resigned.

R. P. Harrington, assistant freight traffic manager of the St. Louis-Southwestern at St. Louis, has been appointed traffic manager in charge of solicitation. **W. K. Knobeloch**, assistant freight traffic manager at St. Louis, has been appointed traffic manager in charge of rates. **A. J. Lehmann**, assistant freight traffic manager, at St. Louis, has been appointed traffic manager in charge of divisions. **W. F. Murray**, freight traffic manager of the Texas lines at Tyler, has been appointed traffic manager in charge of relations with public, civic and commercial organizations. Each of these officers will have headquarters at St. Louis and Tyler. **H. M. Roberts** has been appointed assistant general freight agent at Tyler, succeeding **D. F. Brown**, deceased. **E. S. White**, assistant general freight agent, has been appointed perishable freight agent, with headquarters at St. Louis, Mo.

The Minneapolis & St. Louis announces that **E. E. Nash** has asked to be relieved of his duties as chief traffic officer in order to have more time for duties as chief operating officer. **John A. Lucey** has been appointed chief traffic officer with headquarters at Minneapolis, effective January 1.

Ira H. Hubbel, freight traffic manager of the New York Central at New York, has been appointed assistant traffic manager with the same headquarters. Other appointments are as follows: **D. E. Gelatt**, freight traffic manager at New York to succeed Mr. Hubbel; **G. H. Clark**, assistant freight traffic manager at New York; **M. R. Garrison**, general freight agent in charge of rates and divisions at New York; **F. J. Hahn, Jr.**, and **R. J. Hopper**, assistant general freight agents at New York; **J. B. Finucane**, division freight and passenger agent at Watertown, N. Y., succeeding **F. L. Wilson**, retired.

The Chicago Great Western announces that **P. R. Flanagan**, assistant general freight agent, has been appointed general freight agent, in charge of solicitation of freight traffic, with headquarters at Chicago. The position of assistant general freight agent has been abolished. **R. A. Bishop** has been appointed manager, mail, baggage and express traffic, with headquarters in Grand Central Station, Chicago. The office of general baggage, milk and express agent has been abolished.

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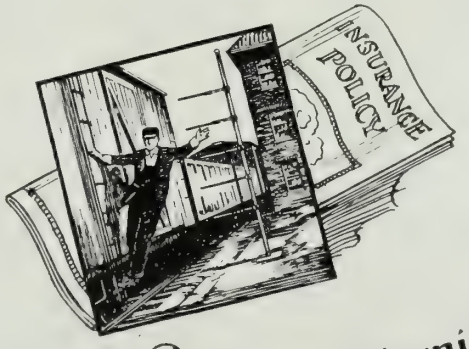

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Mechanical

H. L. Needham, master mechanic of the Chicago Terminal of the Illinois Central, has been appointed general master mechanic of the Chicago Terminal, Illinois, Springfield and Indiana divisions, with headquarters as before at 63rd street, Chicago. **N. Bell,** master mechanic of the Iowa division at Waterloo, has been appointed general master mechanic of the Iowa, Minneapolis and Wisconsin divisions, with the same headquarters. **R. R. Royal,** general foreman of the locomotive department at Paducah, Ky., has been appointed master mechanic of the Paducah shop. The jurisdiction of **W. F. Lauer,** master mechanic at Memphis, has been extended to include the Mississippi division.

The Burlington announces the appointment of **O. H. Hagen** as superintendent, steel car plant, with headquarters at Galesburg, Ill.

A. Mihleisen has been appointed general inspector of boilers of the Santa Fe, with headquarters at Topeka, succeeding **George Austin,** who has retired after 54 years of railway service.

Civil

The Milwaukee announces that **William Shea,** general roadmaster, has been appointed assistant engineer, maintenance of way. The title of general roadmaster has been discontinued.

G. K. Farner, division engineer of the Racine and Southwestern division of the Milwaukee at Beloit, has been transferred to the La Crosse division at Portage, succeeding **F. R. King,** resigned. **C. Holland** succeeds Mr. Farner at Beloit.

E. Betts, assistant engineer of standards of the Southern Pacific, has been appointed inspection engineer, with headquarters as before at San Francisco.

J. R. Higgins has been appointed valuation engineer of the western lines of the Santa Fe, with headquarters at Amarillo, Tex. **W. R. Varnum** has been appointed assistant division engineer on the Coast lines at Needles, Cal.

Obituary

William Paton Thomson, former vice president of the Rail Joint Company, who resigned September 30, because of poor health, died December 21 in the Atlantic City Hospital. Mr. Thomson was born at Scotland, Pa., October 7, 1872. He was graduated from Princeton University in 1896. In 1914 he became vice president of the Rail Joint Co., in charge of engineering and design.

R. B. Luckey, assistant treasurer of the Baltimore & Ohio, with headquarters at New York, died December 21 in Montclair, N. J. Mr. Luckey was 65 years of age.

W. E. Farris, vice president of the Mobile & Great Northern, died at New Orleans, January 4, aged 71.

John M. Hansen, chairman of the board of the Standard Steel Car Co., died December 13 at La Rochelle, France.

H. H. Hale

Frederick L. Wells, president of the Duner Co., Chicago, died December 9, after a long illness.

Fred Price, chief of car service of the Canadian National, died in Chicago while attending the meetings of the American Railway Association in that city in December. Mr. Price was 65 years of age and had been in railway service for about fifty years.

Russell J. Allyn, assistant general freight agent of the New York Central at Detroit, died in Cleveland, December 17.

E. W. Brown, division engineer of the Illinois Central at Baton Rouge, died November 21 at New Orleans.

A. E. McKnight, assistant general solicitor of the Texas Lines of the Missouri-Kansas-Texas, died at Dallas, November 30.

L. M. Bates, division engineer of the Chicago & North Western at South Pekin, Ill., died in that city December 21.

N. S. Hunt, assistant to the purchasing agent of the Delaware & Hudson at Albany, died there December 19.

James Isaac McKinney, retired superintendent of the Montgomery and Mobile division of the Louisville & Nashville, died at his home in Montgomery, Ala., December 12, aged 77.

George D. Dager, superintendent Rochester division of the New York Central, died December 19 in Rochester, aged 60.

W. E. Renneker, assistant general freight agent of the Atlantic Coast Line at Rocky Mount, N. C., died December 14, after 43 years in the service of that railroad.

Irving T. Hartz, president of the Morden Frog & Crossing Co., Chicago, died December 17.

Supply Trade Notes

The Bird-Archer Co., Ltd., announces the incorporation of a separate company in Canada with headquarters at Montreal. The officers of the company are: **P. B. Bird,** president; **L. F. Wilson,** senior vice president; **L. G. Calder,** vice president and general manager; **C. A. Bird,** secretary, and **J. Ferguson Smith,** treasurer.

Fred Speer, for the past ten years mechanical representative of the Philadelphia office of the Gustin, Bacon Mfg. Co., is now associated with the **Joseph Dixon Crucible Company,** Jersey City, as special railroad representative for their railroad products, including graphites, graphite lubricants and graphite paints.

H. M. Davison, manager of excavator sales, eastern territory, for the **Harnischfeger Sales Corpn.,** has been appointed general sales manager, with headquarters at Milwaukee.

William P. Cayton, for the past 20 years auditor and assistant to the president of the **Rail & River Coal Co.,** Cleveland, has been elected president of that company, to succeed **W. R. Woodford,** deceased.

The General Steel Castings Corpn. has taken over the **American Steel Foundries** Thurlow plant at Chester, Pa., and will continue to manufacture the same class of products.

H. H. Hale, specialist on railroad equipment, now represents the **Gold Car Heating & Lighting Co.** of Brooklyn, whose founder, Edward E. Gold, was the father of the modern type car heating systems in 1879. Mr. Hale, who has been a master mechanic and superintendent of motive power, will have his headquarters at 75 Fremont street, San Francisco.

Fred G. Zimmerman, vice president, secretary and treasurer of the **T-Z Railway Equipment Co.** of Chicago, has resigned to engage in other business.

N. B. Arsdale, formerly with Magnus Co., Inc., and later with the mechanical department of the Union Pacific at Omaha, has been appointed secretary and treasurer.

WHY Great Railroad Systems continue to use BALSAM-WOOL light-weight insulation

Each improvement adopted by railroads to increase efficiency, safety or comfort leads to another.

For example, to make steel passenger cars quiet and keep them at an even temperature, a lining of insulation was found necessary.

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Large Capacity 80 Cu. Ft. Bucket Multiple-track "N. & W." Type Electric Cinder Plant. Designed and Built by Us for T. H. & B. Ry. Co., Hamilton, Ontario, Canada, 1929

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"Side-Cut, Non-Skim" Coaling Gate

Patents May 1926 and Ma 24th, 1927

THE flow of coal is controlled by a pair of arcuate gates having a pivoted connection at the sides of the chute so as to be movable transversely of the chute by means of a simple and efficient lever arrangement. This gate when open will permit a discharge of coal of uniform run and quality. There is no perceptible variation in the successive discharge. This is an important factor and is a decided improvement over undercut gates. Many in service. Price on request.

Transportation

(Reg. U. S. Patent Office)

The National Monthly
of the Transportation Industry

Vol. VI

No. 2

FEATURES *for February,* 1930

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Cutting the Cost of Air Travel, — *J. E. Bullard*

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The A. R. E. A. Meeting

THE AMERICAN Railway Engineering Association will meet at the Palmer House, Chicago, March 11, 12 and 13, for its 31st yearly convention. Sessions will be held in the Grand Ball Room at 9 a.m. and 2 p.m. daily.

The yearly gathering of the A.R.E.A. is also the occasion for the sessions of the Engineering Division, (construction and maintenance section), of the American Railway Association, the sessions being concurrent.

Business to be transacted will include consideration of and action upon the customary reports of standing and special committees on roadway, ballast, rail, track, buildings, wooden bridges and trestles, masonry, grade crossings, signals and interlocking, records and accounts, rules and organization, water service and sanitation, yards and terminals, iron and steel structures, economics of railway location, wood preservation, electricity, uniform general contract forms, economics of railway operation, economics of railway labor, shops and locomotive terminals, coöperative relations with universities, rivers and harbors, standardization, clearances, stresses in railroad track.

Bulletins 319, 320, 321, 322, 323 and 324 contain the reports of the listed committees to be presented at the meeting. These bulletins are distributed to the membership in advance for consideration and the preparation of discussion.

The Signal Section meets March 10-11 at the Hotel Stevens.

There will be also an exhibition by the National Railway Appliances Association.

THE TRANSPORTATION PUBLISHING CO., INC.

(Formerly, Associated Pub. Co.)

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New York
51 East 42nd Street

Super-Power Puts "legs" On the Freight Car

"TO PUT 'legs' on the freight car, render it nimble, has been a matter of constant endeavor. How well the Boston & Maine has succeeded is indicated by attainment of a record high of 32.4 miles per car per day in October, including surplus and bad-order cars. This contrasts with only 18.5 miles in October, 1922, and with an average of 16.9 for that year. The average freight car on the Boston & Maine is covering almost twice as much ground now as eight years ago."

—Wall Street Journal, Dec. 12, 1929.

An important factor in this performance is the group of Lima Super-Power Locomotives. These engines have proven their ability to increase gross ton miles per train hour with lower direct operating costs and to show a fine return on the investment.

LIMA LOCOMOTIVE WORKS

Incorporated

LIMA, OHIO

Imagine the Courteous Agent or Night Operator in Such a Place When No. 4 Arrives Six Hours Late, Two Passengers, Both Drummers With Large Trunks!

When Winter Comes

By Earle W. Gage

DOWN THE line comes the giant rotary, thrust forward by the tremendous power of two leviathan locomotives, casting up great clouds of snow and ice like a hurricane. As a carpenter's auger bores into a pine board, so does this wide bit, kept spinning by the force of an 800-horsepower auxiliary engine, cut through the drifts, making way for the limited trains.

Every winter, as the snow-fighting battalions of the railroads serving snow country, take the front line trenches along the world's longest peace-time battle front, new and thrilling chapters are written in the never-ending story of transportation. Over most of Canada and 36 states of the Union, stretches the great American snow belt, where a hand-to-hand struggle, the like of which is not staged by any other industry, is waged by the railroad lines which span this vast empire. Unsung heroes, fighting a glorious night and day battle, keep traffic running as usual.

It requires only a few inches of snow to hog-tie our railroads and stagnate the operation of trains. In combating the snow bogey, railroad men overcome tremendous obstacles, revealing a devotion and hardihood the like of which the world has never seen. In the teeth of the raging blizzard they go after the snow demon, a master bandit, "wanted dead or alive" throughout the land of snow and ice, for holding up the mails, paralyzing traffic, passenger, express and freight, and threatening to starve and freeze the millions depending upon railroads for food and clothing and what not.

From the time old Jack Frost marches down out of the Arctic, bringing feathery snow flakes and crystal ice, until spring's warm sun returns to remove the grim enemy of transportation, the battle rages on. Men from all departments keep up the fight against winter in its worst mood, charging again and again, as every storm brings its problem to those charged with the operation of trains.

Although the sun may shine brightly overhead, and only a few inches of snow cover the ground, the snow-fighting special is hurried to some distant section of the division in readiness to combat the storm which United States weather bureau forecasters announce on the way, for modern snow fighting is based upon advanced scientific knowledge now and not on the old hit-and-miss methods of early days.

The deepest snowfall occurs in the Rockies and the Cascades of western America where a depth of from 20 to 40 feet is not an unusual task confronting the bold snow army. At Summit, Cal., there is a normal winter snowfall of 60 feet, and as much as 24 feet have been known to fall in a single week. However, in the northern and eastern parts of the United States, the most spectacular winter battles are waged by railroaders, whose duty it is to keep the main traffic arteries open for trains serving the greatest number of cities and towns, the congested centers of population.

Three Engines, One Day in 1925, Pulling the Twentieth Century Into Syracuse.

The snow battalion of the New York Central Lines is without doubt supreme among railroaders. The engineers have designed what is considered the most powerful and efficient snow plow used by any road. This is used to keep the lines of the St. Lawrence division, in Northern New York State, clear always. Here record-breaking drifts often accumulate to retard traffic. Costing $50,000 to build, this giant machine which requires the services of from one to three heavy-duty locomotives, according to the depth and character of the snow to be handled, is capable of boring a hole through drifts as high as the locomotive, throwing it aside and out of the way. The machinery is housed in battleship steel; the boiler is of a modern locomotive type, with brick arch, accompanied by the regulation locomotive tender, for coal and water. The crew is housed in warm quarters.

In the Canadian Rockies, where the Canadian Pacific and the Canadian National Railways wage spectacular snow battles, through 20-foot drifts, often packed to the consistency of ice under the moist atmospheric conditions, high explosives and powerful snow plows are necessary. The cutting knives on the type of plow commonly used are two-inch steel plate, with the other parts built in proportionate strength. The plow wheel is driven by a direct-connected marine engine. The frame of the machine resembles a bridge girder to support the casing or hood, which reduces vibration to a minimum. These machines have yet to nose into snow that they are incapable of handling.

The railroad engineer has perfected a fleet of winter-fighting machines, intended to handle all sorts of snow conditions, from a few inches to several feet in depth. Specially adjusted rotary plows are capable of throwing snow over several tracks, loading it into standing flat cars, and hauling it away, save time, labor and expense. Other large plows have spreaders attached to them, reaching out to one side and leveling away the drifts, at the same time digging a gutter to carry off the water as the snow melts. Locomotive-pilot plows, wing plows, spreader plows, flangers, ice cutters, and snow sweepers, are a few of the machines.

What railroaders agree as one of the outstanding achievements of freeing a great railroad of snowbound conditions, possibly the greatest snow battle for more than a century that railroads have served the United States, was the conflict fought by New York Central men in the Syracuse sector, five years ago, when they literally dug three divisions out of a snow bank and had traffic moving as usual in the record time of 17 hours, although a steady downfall of wet fine snow continued, followed by a drop in the thermometer resulting in a solid mass of wet snow covering the earth to a depth of five and six feet on the level, and much deeper in depressions. That historic storm broke January 29, 1925, and was the worst since 1888. More snow fell in the few hours than at any time in history. Old-timers who had fought snow for 50 winters agreed it was the worst they had ever seen. The men were obliged to excavate an enormous mileage of tracks, hundreds of switches, many yards, and hundreds of miles of sidings. To do this the most gigantic mobilization of men, locomotives, and snow-fighting equipment in railroad history advanced against the storm.

The crack limited trains sped through on time the night the storm broke, but two hours before midnight a westbound passenger train was stalled a half mile west of the station, in the canyon-like street filled with snow so deep that brooms did not remove it. This was the beginning of a terrible fight in which many trains were stranded in snow banks. More than nine hours were consumed in getting a westbound limited a quarter of a mile to the station, through the unyielding mass; two powerful freight locomotives were required to assist the two passenger engines to move the nine steel cars, in two sections.

Behind one passenger train a fleet of 16 night passengers were snowbound; to the east, another fleet of 11 passenger trains were crippled and had to come to a stop. Freight trains plugged every siding, their engines and crews abandoning them to help in the fight.

On and on battled the snow fighters, more than 5,000 men, volunteers from every department of the road, up against a tough proposition. To move one of the stranded passenger trains required seven locomotives, pushing and pulling alternately and continuously for 35 minutes before the train could be moved forward or backward, the wheels having frozen to the rails.

The ingenuity and efficiency of the supervising officials, and the loyal never-say-die spirit of the trainmasters, engineers, firemen, conductors, brakemen, in the end won a victory

On the Denver & Salt Lake, 11,000 Feet Up. The Moffatt Tunnel Makes This Kind of Thing Impossible Now.

two days after the storm broke, and traffic was moving on schedule. To do this, men worked regardless of hours on duty or reliefs, often in snow to their armpits, frequently with their clothing frozen to their bodies or soaked to the hide. In face of the deepest snow in history, they achieved something big when they had the wheels turning in 16 hours and 55 minutes.

By this time, the DeWitt freight yards were snowed in. More than 6,000 freight cars were there, and no tracks were available to the fleets of freights headed that way. Not a car could be moved an inch, so deep was the snow. So unyielding was the mass that four of the most powerful freight locomotives were unable to drag two freight cars at a time. The yards had to be dug out of the snow!

The field of battle stretched out for six miles and included the clearing of 130 miles of track and the uncovering of 636 switches. The job undertaken was that of moving off the area more than 1,300,000 cubic yards of snow, an achievement without precedent in railroading.

The fact that long strings of cars stood on the sidings only added to the woe of the snow fighters. It was impossible to throw off the snow by using rotary plows. Thus, 2,000 men were armed with shovels and started to shovel out the yard. Night and day they kept it up, and not until February 7, was traffic resumed in the yards. From no traffic to the movement of 80 trains of 6,000 cars a day, the army uncorked the yards, and put to rout the worst freight tie-up in history.

Keeping the snow off the tracks, and the wheels humming as usual, means a tremendous annual tax to the roads spanning snowland. This financial burden, which produces no possible revenue, is one of the many expenses these roads confront in serving the public.

The moment a storm breaks and assumes serious proportions, all maintenance of way gangs are turned to snow removal work. Men are stationed at all important switches to keep them clear of snow and ice. In some places switches are kept clear of snow by burning hydro-carbon oil, a residue from the Pintsch gas manufacturing process. The electrical engineer has more recently perfected an automatic switch-heating equipment, which, by means of electric current melts the snow as fast as it falls on the switches at remote points, and thus insures perfect service irrespective of snowfall conditions. Several thousand of these switches have been put into service in readiness for the storms of the present winter, some of which may be costly.

Scene On the Great Northern Ry., Taken, Doubtless, in the Winter.

From beginning to successful conclusion, the snow-fighting army stages a colorful conflict, from the dispatchers who remain on duty for many hours, to the car-wheel inspectors with torch and hammer.

Government Railway Deficits

The South Australia railways show a loss of £1,400,358; New South Wales, £1,039,386; and Victoria, £62,829. The South Australia railways report that the actual loss for the year was £1,182,166. After £218,178 had been returned to capital for worn-out and obsolete equipment, the deficit was £1,400,358. The earnings for the period totaled £3,618,735, and the expenditures £4,800,901. The ordinary working expenses amounted to £3,234,094, estimated depreciation £200,000 and interest on capital £1,366,807. The accumulated working deficit has thus been increased to £9,461,646. The earnings were less than the previous year by £380,848. New South Wales railway earnings amounted to £19,-615,616 and working expenses to £14,978,050. A contribution of £800,000 was made by the government towards losses on working of country development lines. Interest accounted for £6,150,000, and sinking fund charges for £326,952. New South Wales tramways showed a loss of £9,343. The Victorian railways had a gross revenue for the year of £13,262,387. Gross railway earnings amounted to £12,974,253, tramway earnings were £77,167, and the departmental road motors produced a revenue of £15,163. The working expenses were £9,739,392 for railways, £62,830 for the tramways, and £31,236 for the buses, making a total of £9,833,458. The net revenue was £3,428,-928. Interest charges and expenses amounted to £3,-491,757.

Mostly Tunnel

The little boy who wailed when they took him on a train ride that had no tunnels, should go to France. There, on one line, he could get tunnels to his heart's content. Winding a tortuous way around and through the Alps is a little southern line that terminates across the Italian border. Approximately 60 miles in length, two-thirds of it is tunneled. Insignificant in mileage, the road is nevertheless recognized on the continent as an outstanding accomplishment in engineering and politics.

Highway on a Wall

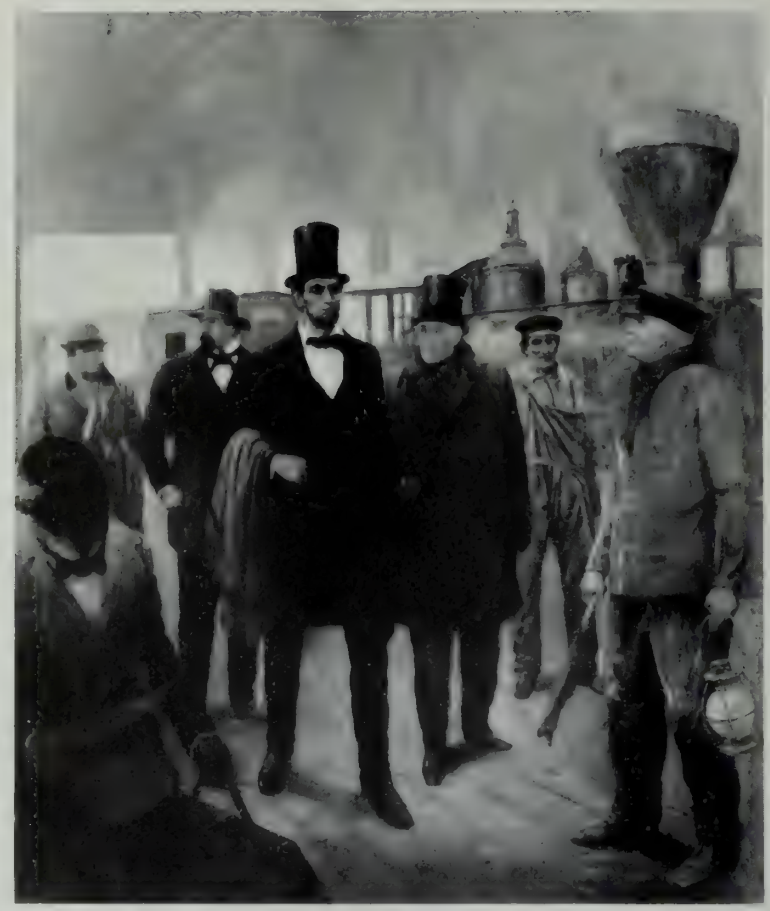
Despite its revolutions and its civil wars, China seems conscious of the need of improved highways, one thing that war does teach. The ancient wall around the city of Nanking, a recent cable says, is to be converted into an elevated highway for motor traffic. When completed it will be 22 miles long and average about 25 feet in width. Barring interference by the current revolutions, a city of one of the oldest countries in the world will have a longer elevated boulevard than any in the United States.

Lincoln's Ride To Washington

A Railroad Story

By

William J. Maddox



With Colonel Lamon Beside Him, and Allan Pinkerton at His Back the President-Elect Strode Up the Washington Platform. From the Painting for the Baltimore & Ohio by Stitt.

IN THE CHILL gray of a February morning in 1861, the 23rd to be exact, a tall, gaunt figure in black strode up the deserted platform of the old Baltimore & Ohio station at Washington. The Capital City was scarcely astir yet, certainly not awake to the arrival of the President-elect. "Old Abe" was not due until the next day.

Close at his heels followed two stalwart, silent, alert men, Allan Pinkerton, the detective from Chicago, and Col. Ward H. Lamon. Just inside the gates a fourth man joined the party with a subdued greeting, led the three men to his carriage at the curb and whisked them away through the quiet streets to Willard's Hotel. The anxious last lap of Lincoln's journey to Washington for his inauguration was over.

At eight o'clock the message, "Your package arrived safely and has been delivered" was flashed to Philadelphia where Samuel M. Felton, president of the Philadelphia, Wilmington & Baltimore Railroad, and father of the Samuel M. Felton we know today as chairman of the board of the Chicago Great Western Railway, had waited through a tense and sleepless night.

That Lincoln arrived safely is, of course, history. But how the journey was accomplished is something of which old time railway men may well be proud, a drama of railway initiative and vigilance. It is significant, too, that the first word of Lincoln's safe arrival went to a railway chief.

It is not too much to say that but for the care and watchfulness of a handful of railway men Lincoln might never have lived to enter the White House, for these men had taken upon themselves the burden of seeing him through.

Lincoln's journey to the national capital for his inauguration had been something of a triumphal progress. Leaving Springfield, February 11, he had swung the circle of the "free" states, in Indiana, Ohio, New York, and Pennsylvania. Cheering crowds had greeted him at all the big cities. State legislatures had received him. There had been ten days of official receptions, handshaking, speechmaking, bonfires, and parades.

But as the Presidential special approached the Mason and Dixon line, his friends began to feel apprehensive. Maryland, the slave-holding border state, had not declared itself. Much of its sympathy was with the South. No public receptions were planned for him in Baltimore. The city and state were making no preparations for his arrival. Mr. Giddings, president of the Northern Central, had asked him and his family to dinner, and the manager of the old Eutaw House had offered him hospitality. But that was all.

Lincoln's itinerary called for the raising of a flag on Independence Hall, Philadelphia, the morning of Washington's birthday. Then a run to Harrisburg to address the legislature in the afternoon. The next day at 9 a.m. he would take the Northern Central for Baltimore, thence to Washington over the Baltimore & Ohio. So far as the federal government was concerned its newly elected President might have been touring in Alaska.

But Sam Felton of the P. W. & B. had been keeping a watchful eye on events in Maryland. His road formed the connecting link between

free state and slave. Rumors were heard of plots to seize Washington, burn the public buildings, prevent the count of the electoral votes, even to install Jeff Davis in the White House.

Well in advance of the presidential party, Mr. Felton called in Allan Pinkerton from Chicago. With several operatives the detective hastened to Baltimore, and under cover discovered enough to send him post-haste back to Philadelphia. The plots were not all gossip, he reported to Felton; there was real danger ahead. One plot was to mine the Northern Central and weaken the bridges.

It was the afternoon of February 21. Pinkerton laid his facts before Felton and N. B. Judd of Chicago, a personal friend of Lincoln's. Together the three men went to Lincoln's suite in the Continental Hotel urging him to cut short his trip, and go the same evening on the 11 o clock train to Washington.

Lincoln demurred. He would not cancel his two remaining engagements, to raise the flag over Independence Hall in the morning, and to address the legislature at Harrisburg in the afternoon.

"What would a nation think of its President stealing into the capital like a thief in the night?" he asked.

He agreed, however, to leave his safety in their hands after he had kept these two engagements.

Judd and Pinkerton; General Manager Franciscus of the Pennsylvania, and Henry Sanford, representing Col. E. S. Sanford, president of the American Telegraph Co., went to Felton's house, where they conferred until 4 o'clock in the morning. When the meeting ended their plans were made.

After the flag raising at 6 a.m. additional reports of danger arrived. Lincoln held out for the trip to Harrisburg. After that, he declared, he would do as Felton and his associates thought best. He had to go to Harrisburg and meet the legislature, and he did.

At dinner that evening at the hotel in Harrisburg he was called out of the room. Colonel Lamon, awaiting him outside, led Lincoln to a cab, explaining that they were to go back immediately to Philadelphia. Lamon, a young man of active, herculean frame, was to be the only one in the party to accompany him. Lincoln's family, his secretaries, Nicolay and Hay, and his other personal friends were to be left to come along later according to schedule.

A special locomotive and car, provided by Thomas A. Scott, president of the Pennsylvania, awaited the two men. In Philadelphia, Mr. Felton had instructed the general superintendent of the P. W. & B., H. P. Kenney, that an important package was to go through on the 11 o'clock express which connected with the B. & O. at Baltimore for Washington, and word was passed down to Conductor Litsenburg not to start under any circumstances until that package had been placed personally in his hands. Felton was to be advised of its delivery at Willard's Hotel, Washington, the following morning. The "important package" was a bundle of old railway reports.

Watch in hand, Litsenburg waited impatiently by his train in the P. W. & B. station at Broad and Prime streets, Philadelphia. At 11:30 a tall man, wrapped in a shawl, stalked up the train shed and entered the sleeping car. Two other men came along about the same time. Lamon had been joined by Pinkerton.

"Well, old man," commented Litsenburg as he took the first man's tickets, "it's lucky for you that we've got to wait for some despatches; we're half an hour late now."

The "old man" smiled.

A moment later the "important package" was handed to Litsenburg.

Unknown to Pinkerton and Lamon, one of the railway's detectives was to help guard the distinguished passenger. He was George Stearns.

Evidently things didn't seem quite normal to Conductor Litsenburg, for when he got a chance at Stearns, he said: "George, I thought you and I were old friends. Why didn't you tell me we had Old Abe on board?"

George was startled. Then, thinking Litsenburg had been let in on the secret, he admitted it and asked him to help him keep watch.

"I will," the conductor promised, "if it costs me my life."

So they watched through the night, one at each door of the car. Litsenburg, it turned out, had mistaken another passenger in the sleeper for Lincoln.

At 3 a.m. the train pulled into the President street station of the P. W. & B. at Baltimore. In those days passengers from Philadelphia and New York were transferred across Baltimore to the Camden station of the B. & O. by means of a single track road through Pratt street. The cars were detached and hauled singly by horses to the waiting locomotive.

John W. Garrett, president of the B. & O., had been advised of the part his road was to play, and had issued imperative orders for the Washington train that night to wait for the P. W. & B. connection. Little did the few persons abroad at that early hour think that in one of the darkened coaches, plodding its way through the center of the city was the "man of the hour" sitting muffled in a great shawl.

At 6 a.m. the forty-mile last leg of the journey was completed, and Lincoln, followed by his two bodyguards, stepped out upon the deserted, dim-lit platform of the old B. & O. station in Washington, just a few blocks from where the Union Station now stands.

At 8 a.m. Samuel Felton's vigil was rewarded by the reassuring message concerning his "important papers." To Mrs. Lincoln, at breakfast in Harrisburg that Sunday morning, a cryptic telegram was handed: "plums delivered nuts safely." Code for "Lincoln is in Washington."

There are other numerous railroad side-lights on Lincoln, some of them authenticated and some just a part of the thousands of stories told about the martyred President. In the days of the Civil War, as in the most recent conflict across the seas, railroads were vital factors. Lincoln, as history shows, surrounded himself with railroad men. Edwin M. Stanton, his secretary of war, had been general counsel for the Ohio Central, then being merged with the Baltimore &

DO YOU REMEMBER HISTORY?

ABRAHAM LINCOLN, *sixteenth President of the United States, was born in Kentucky, February* 12, 1809; *was elected to the Illinois legislature in* 1834 *and re-elected at the three following biennial elections; licensed to practice law in* 1836; *elected a representative in congress from the central district of Illinois in* 1846; *failed of election to the United States senate in* 1854; *engaged in the famous debates with Stephen A. Douglas in* 1858; *nominated to the Presidency in the Republican National Convention at Chicago in May,* 1860, *and elected the following November. He assumed the office of President March* 4, 1861.

Lincoln was re-elected President in 1864. *He was shot April* 14, 1865, *in Ford's Theater, Washington, by John Wilkes Booth, and died the next day.*

This Photograph of the Lincoln Memorial at Washington Took Fourth Prize in the Baltimore & Ohio Photographic Exhibit Last Summer. It was Made by P. J. Magill.

Ohio. One day, the story goes, Stanton and Lincoln were going over some railway maps when the President expressed great surprise at finding so many roads running east and west, and so few going north and south. Stanton remarked: "Mr. President, that's why we're having a war between the North and the South, and not between the East and West."

Then, too, there is the story told by Erastus Corning, a Civil War director of the New York Central. In the spring of 1860 Lincoln made a speech in New York. Corning heard the young lawyer from out West and was much impressed. Lincoln had handled some railway cases in Illinois with some success. Corning got an interview with him at the old Astor House, and the upshot of the conversation was that he offered him the general counselship of the N. Y. Central at $10,000 a year, an unheard-of salary for those days. Lincoln's friends urged him to take it, and were dumfounded when he declined, saying so much money would demoralize him. He was human enough, however, according to one of his close friends, to be "kinder flighty" over it for a few days until he made up his mind. And of course most of us have heard about Lincoln's $5,000 fee from the Illinois Central, big money for those times.

For those interested in pursuing the subject still further reference may be made to "The Harvard Monthly," Vol. I, Cambridge, Mass., 1886; Schouler's History of Massachusetts in the Civil War; History of Essex County, Mass., Vol. II., Philadelphia, J. W. Lewis & Co., 1888. There is also some reference to the incident in Nicolay and Hay's Life of Lincoln.

Speaking of his father's part in this historic chapter of Lincoln's life, Samuel M. Felton, now chairman of the board and formerly president of the Chicago Great Western Ry., once said: "When the bridges between Havre de Grace and Baltimore were burned by the rebel organization in Baltimore which had plotted to take Lincoln's life, my father immediately took steps to open a new line via Annapolis, using a ferry boat from Havre de Grace to Annapolis and thence railroad from Annapolis to Washington. This route was kept open throughout the war and served as a very good substitute until bridges were restored between Baltimore and Havre de Grace."

The railroad referred to as the Philadelphia, Wilmington & Baltimore is now a part of the Pennsylvania Railroad.

Railway Conditions in China

With the exception of the first week in December, the Shanghai-Nanking line maintained schedules throughout 1929, with operating revenues reported to be double those of 1928. It is understood that negotiations now are under way for complete redemption of the railway, for which purpose a representative of the ministry of railways now is in London. The Shanghai-Hangchow line also had a prosperous year. Some improvement is reported in the Kiukiang-Hangchang line following assumption of control by the ministry of railways, with negotiations reported under way with Japanese interests looking to readjustment of loan obligations. The Lunghai line experienced the worst year in its history, as a result of damages amounting to millions following the retreat of Kouminchun early in June and the complete disruption of services during the remainder of the year. The Peiping-Mukden line is under control of the Mukden authorities and is using a considerable amount of rolling stock owned by other North China lines seized by Chan Tso Lin in 1928.

A Costly Dummy

In a test case at Milledgeville, Ga., Jan. 16, a jury in the superior court awarded $1,500 to Mrs. A. H. Paschall against the Georgia railroad for damages to her residential property by operation of a "dummy" line railroad through the street in front of the property.

Several citizens have been trying for a year to have the "dummy" line removed from the city streets, and failing in this Mrs. Paschall and others entered suits for damages. Mrs. Paschall's suit was the first tried and the jury was out all night reaching the verdict.

The Reading Company's North Broadway Street Station at Philadelphia.

None Finer Than This in Greece

The Reading's North Broad Street Station Is A Classic Structure

By Charles Dillon

THE NEW North Broad Street Station of the Reading Railway System is an excellent example of the purely classical in architecture to which railroads are giving so much very costly attention nowdays.

The new structure is, as the name indicates, on Broad street at Lehigh avenue, North Philadelphia, directly connected by tunnel with the Broad street subway and easily reached by many surface lines. The exterior is faced with Indiana limestone resting on a granite base. The twelve immense pillars also are of Indiana limestone. A few steps below the street level is the main waitingroom, a striking example of the builder's art. The sidewalls are of natural Travertine stone, quarried, cut and finished to order in Italy for this building. Especially interesting is the lofty and beautiful ceiling panelled in antique gold and green. The floor is Tennessee marble laid in pleasing patterns. Through the center of the room are placed comfortable seats especially designed in weathered oak. Abundance of daylight streams through large casement windows. The artificial lighting by means of handsome fixtures all about and suspended from the ceiling is particularly worthy of notice. A very efficient ventilating system supplies pure washed air, which in cold weather is warmed to just the right degree for comfort.

From the main waiting-room and down a few broad steps patrons pass through a wide corridor to the two island train platforms. These platforms are approximately 1500 feet long and are protected from sun and rain by about 1150 feet of train shed. All trains to and from the Reading Terminal will stop at North Broad Street Station.

At the south end of the station and on the street level is the main restaurant, which is under the same management as the Reading Terminal Restaurant. The Terrazzo floor, lower walls of Tennessee marble, with the most carefully designed and

The Train Platforms and Parking Space.

chosen furnishings, make this dining room unusually attractive.

The erection of this station also made necessary an addition to the power house of the Reading Company on the opposite side of the tracks.

The project was designed and executed under the supervision of Clark Dillenbeck, chief engineer of the Reading Company, the station building being designed by Horace Trumbauer, a Philadelphia architect. The building contract was divided between two large Philadelphia builders, Irwin & Leighton for the station building, and the Hughes-Foulkrod Co. for the station platforms, tunnels, driveways, power house, bridge changes and the moving of certain structures. The station cost $2,000,000.

The Real Railroader

"True railroaders," says a prominent railroad man in a recent issue of the Saturday Evening Post, "is a term denoting persons vastly different from the men who are merely in the railroad business. A real railroader is more than a job holder. He works on a railroad because he loves it, because there is something about it which thrills him and lures him; he never loses the joy of watching a speeding train screaming into the sunset with its power and its rush and thunder, its hint of far places, its battle against distance and the elements.

"The red glare of an open firebox against the starlit sky is a beautiful thing to him; the click of wheels is the most rhythmic of music. To him there is a deeply human element about the vast, thunderous, vibrant machine called a railroad; something to cherish, to foster, to work for and fight for and consider always in its every element of welfare."

One By An Old Timer

C. J. Connell, of Toledo, retired after more than 51 years of active service on the Baltimore & Ohio, 41 years of it as conductor on the Toledo-Cincinnati division, paints a word picture of how the men of the railroad plunged into the forest when an iron rail literally broke to pieces, and from the heart of the virgin woods constructed a rail that made good in a pinch.

"It happened this way," relates Connell. "One day on No. 55 we were flagged at Haskins, Ohio, and found that at least five feet of rail, constructed in those days of iron, had been torn to pieces.

"We were in a quandary. There was no rail handy to replace the damage, and we racked our minds to hit on some way of getting our train and others moving. Then some one had a bright idea. Just who it was I don't remember, but he called out, 'we'll cut a rail from a white oak; it can be done.'

"Well, the section men entered the woods, got busy with their axes and cut down a white oak sapling. Measurements were made carefully and it was shaped to the exact size and shape of the broken iron rail. That is, it was as exact as our limited tools could make it.

"We spiked it to ties, and No. 55 went across safely. Other trains followed and for at least ten days, I believe it was nearer two weeks, the wooden rail did business until a new iron rail arrived. It took a long time to get equipment in those days, but this is the only case I ever heard of where oak did the work of iron in this respect."

"Nobody has ever established a successful business without dreaming about it at the beginning.—*Ramsay MacDonald.*

A Look Into the Station's Big Kitchen.

One 95-Foot and Two 79-Foot Spans, and Several Shorter Approach Spans, a Total Length of 504 Feet in This Overhead Crossing Above the New Flying Field Road, Leading East Out of Swope Park, Kansas City, Mo.

On Its Own Rails All the Way

After Many Years the Kansas City Southern Ry. Closes the Leeds Gap

By Develle Thatcher

THE LAUDABLE ambition of the Kansas City Southern family to own its rails all the way from Kansas City to Port Arthur was realized finally, after many years, when the line between Leeds and Grandview, Mo., was opened November 29. Trains began using the new line Dec. 5 but complete service did not begin until Dec. 15.

When the Kansas City Southern was completed in 1897, a gap was left between its road, which terminated at Grandview in the highland, a few miles south of the Missouri River, and the terminal trackage serving Kansas City, situated in the Blue River bottoms. Instead of making this connection, trackage rights were arranged over a line already in existence which spanned this gap and afforded sufficient and economical operating facilities. During the early years of the road's operation, the district between Kansas City and Pittsburg was operated as a 1.0 per cent line with the exception of this joint trackage, on which a 1.6 per cent grade, four and one-half miles long, opposed southbound traffic. By the use of helper engines, the operation was handled satisfactorily until the Kansas City Southern carried out a grade revision program in 1912 which reduced the maximum grade between Grandview and Pittsburg Kansas, the first freight division point south of Kansas City, to 0.5 per cent.

Concrete Viaduct Over Roadway; Bridge Is 495 Feet Long, 55 Feet Above the Traffic.

This reduction meant heavier loading of all trains and added to the difficulty of operating over the 1.6 per cent leased line. The situation led to a complete investigation which indicated the feasibility of constructing a line that would conform to the ruling grade on the remainder of the district. There were numerous reasons why the gap should be closed and an unbroken ownership of the entire line be established: a steady increase in business; elimination of all grade crossings; and such important operating advantages afford-

One 47-Foot Deck Plate Girder on Concrete. Bridge is 89 Feet Long.

ed by the new line as the release of helper service, the balanced loading of tonnage trains, reduction of curvature and the amount of rise and fall, as well as the comparative freedom from high water due to the superior location of the tracks which also provides a route of unusual scenic beauty. The project was therefore adopted and work on the construction started in August, 1928.

The project involved interesting engineering feats, chief among which was the avoidance of 25 public grade crossings. This necessitated erecting 27 bridges of the most modern construction, a number of them examples of art in building, combining economy, utility and beauty to an unusual degree. Because the improvement is only about 13 miles long the average man is likely to under-estimate its importance. Realizing this, C. E. Johnston, president of the Kansas City Southern, said in his radio address, after the public celebration November 29, that it was no trifling task the men had just completed. "From 300 to 500 men, using modern machinery and methods," said he, "have devoted more than a year to this work. Think of making cuts, 72 feet deep in places, through almost solid rock for thousands of feet; of filling equally long stretches, often 75 feet in depth; of spanning ravines, from 500 to 1,000 feet wide. Consider, then, that these are merely preliminary steps to the important jobs of track-laying, ballasting, aligning, surfacing, and so forth.

"The new line represents an expenditure exceeding $3,000,000. Its completion gives the Kansas City Southern a line from Kansas City to Pittsburg, Kansas, on which the ruling grades are 26 feet to the mile, and affords this maximum grade on a total of approximately 65 per cent of its entire line."

The Kansas City & Grandview is 13.27 miles long, 321 feet shorter than the old line, has a maximum grade of 0.5 per cent compensated for curvature, and cost about $3,300,000. It leaves the old line at Leeds, immediately south of the Rock Island crossing over the K. C. S. tracks at 37th street, swings to the east across the Leeds bottoms on heavy fills, gradually rises into the hills skirting the Blue River, and follows the higher ground all the way to Grandview, where it crosses the old leased line about 2,000 feet north of the connection with the Kansas City Southern rails.

The territory between Leeds and Grandview is broken with a large number of small hills. For almost its entire distance the new line passes through a country rugged in character, with high, rolling hills cut by deep ravines and depressions, making necessary a large amount of heavy grading and filling to produce the desired grade line. It cuts into the hills and crosses the valleys on embankments or viaducts, and rises on a maximum grade of five-tenths of one per cent until it tops the rise or high point in the vicinity of the Lees Summit road, just north of Grandview.

The improvements effected in the completed new line include, in addition to the reduction of ruling grade to 0.5 per cent, reductions in the total rise and fall from 422 feet to 299 feet, in the total angulation from 993 degrees to 638 degrees, in the rate of curvature from 6 degrees maximum to 4 degrees maximum, and a reduction in total length of 321 feet. The grade crossing situation was also materially improved. On the new line there are 17 private grade crossings and only one public grade crossing, nine overhead grade separations, 17 undergrade separations, and no railroad crossings. On the old line there were 17 public and 17 private grade crossings, one overhead grade separation, one undergrade separation, and two railroad crossings.

The "backbone" of the construction was the grading. All culvert work and the necessary bridge work was arranged so that it would not hinder the prosecution of the grading program. The grading was divided by the general contractor among a number of sub-contractors so that it would be completed by September 20, 1929.

All culvert work was sublet to one contractor, who did the necessary excavating, made the concrete pipe at the culvert location, and placed the pipe and the head walls. The openings provided by the pipe vary from that of a single 24-inch diameter pipe to the combined openings of two 66-inch pipes, the required opening being determined from the drainage areas. The longest culvert is on Mile 18, and consists of double 66-inch pipe, 360 feet long.

The grading required 1,000,000 cubic yards of common earth excavation and 450,000 cubic yards of solid rock excavation. At the north end of the line the general geologic structure consists of a layer of loam and a layer of clay of varying depths covering a stratified structure of limestone which is from five to ten feet in depth. This is followed by alternate layers of shale and limestone. At the south end of the line the alternate limestone and shale formation is overlaid directly with loam. The earth excavation was made with elevating excavators and moved in "cat" wagons. The rock excavation was made through blasting and the use of power shovels, and was moved by trucks, "cat" wagons, or narrow gauge railway.

Fills were placed on a one and one-half to one slope with a crown width of 20 feet below a 20-foot embankment height, and 22-foot width above a 20-foot height. The fills were made with material from the cuts, with the exception of the fills at each end of the line, for which it was necessary to borrow.

Cuts were made with a 26-foot width at grade. Earth excavation was taken out on a one to one slope from the base, down to solid rock. This was done because the material was needed for the fills, and by obtaining it in this manner the fills were made easier to keep clean at no extra cost. Excavation of the rock was then made on a slope of between ¼ and ½ to 1, as decided by the engineer after an examination of the rock structure by drilling.

The largest fill is on Miles 11 and 12 at the north end of the line, and

A 69-Foot Through-Plate-Girder Bridge Over the Frisco Tracks.

contains 405,000 cubic yards of material with a maximum height of 65 feet. A 30-foot concrete arch culvert 135 feet in length carries the drainage from Round Grove Creek under this fill. This arch contains 3,800 cubic yards of concrete.

The largest cut on the line is also on Mile 12, and is over 70 feet deep. The total excavation from this cut was 119,000 cubic yards, of which 71,000 cubic yards was solid rock.

The three principal structures on the line are the reinforced concrete viaducts over U. S. Highway 50 and Flying Field Road, and the steel viaduct on Mile 14. At each of these locations it was necessary to provide for a roadway and a waterway. The type of structure selected for these locations was considered the most economical permanent roadway that could be provided.

The steel viaduct is the largest of the three structures. It spans 875 feet over the valley of a small tributary to the Big Blue River, and is 110 feet above the natural ground surface at its highest point. It is a steel structure consisting of deck plate girder spans on steel towers with concrete piers and abutments. The girders support a concrete slab carrying the ballasted roadbed.

The steel was erected and the slab completed ready for the ballast in six weeks. The viaduct contains 2,200 cubic yards of concrete and 1,000 tons of structural steel.

The reinforced concrete viaducts over U. S. Highway 50 and over Flying Field Road are very similar except that the Flying Field Road viaduct has two more approach arch spans than the other structure.

Steel Viaduct 875 Feet Long, 110 Feet High. It Cost About $175,000.

The viaduct over Flying Field Road is the largest structure on the new line, with the exception of the steel viaduct on Mile 14. The viaduct is built of reinforced concrete throughout, is 65 feet above the stream, and is 504 feet long, consisting of one 95-foot and two 78-foot 9-inch open spandrel type arch spans, with approaches each of one 31-foot girder, two 31-foot 3-inch arches and one 34-foot arch. The viaduct contains 2,750 cubic yards of concrete.

All the track carrying structures with the exception of treated pile trestle over the Municipal Farm Spur on Mile 11 are concrete and steel and have ballast decks. Six of the overhead structures carrying highways are treated timber and three are concrete and steel.

The track structure consists of 127-lb. rail with 38-inch, six-hole angle bars, supported on 7-inch by 12-inch double-shoulder, 1 in 20 cant tie-plates, and 7-inch by 9-inch by 8 feet treated ties, 3,000 to the mile. The track is surfaced on sand for the present to a 12-inch depth under the ties. It is the intention to place rock ballast when the roadbed has become compacted.

Two one-mile passing tracks, two emergency spurs, and one industry siding have been provided. These are laid with 85-lb. rail.

The mile posts, rail rests and other markers on the new line are all of concrete.

Concrete Bridge Over U. S. Highway No. 50. It is 478 Feet Long and Cost About $85,000.

Webb Quits in Australia

C. B. Anderson has been appointed commissioner of South Australian Railways to succeed W. A. Webb, an American, who has been in charge of the railways for the past seven years. Mr. Anderson, who formerly was general superintendent of the transportation branch, will take charge on May 16, 1930.

"Play fair, be square and you will find more sport in living and less fear of dying."—*Lord Dewar.*

It is only those who do not know how to work that do not love it. To those who do, it is better than play—it is religion.—*Patterson.*

EDISON and his STORAGE BATTERY

Seventh of a Series of Historical Sketches Presenting the More Significant of Mr. Edison's Series of Experiments from 1898 to 1908 in His Search for a Dependable, Economical Storage Battery

(Reprints of previous issues will be mailed on request)

Edison Shuts Down His Plant

HIS biographers are agreed that Mr. Edison's greatness lies not so much in his discovery of new scientific principles as in his ability to apply known principles to useful ends.

It was known before his time that electric current could heat many materials to incandescence. Mr. Edison utilized this knowledge and built a practical incandescent lamp. The principle of electromagnetic induction likewise was known, and others actually had built electric generators; but it remained for him to build the first efficient and commercially practical one.

In thus applying science to practical utility, problems are encountered that yield only to long, arduous research. Such a problem unexpectedly appeared a few months after Mr. Edison's first storage batteries had gone on the market. They did not satisfactorily maintain their capacity. Without hesitation, Mr. Edison ordered his plant closed until he could find the solution.

Then followed five more years of experiment, again seeking, not new principles, but better ways

The production of nickel flake always fascinates visitors at the Edison plants. Entirely automatically, cylindrical platers deposit tissue-thin layers of pure nickel alternated with copper. The resulting laminated sheets are then cut into tiny squares, another entirely automatic process, the copper chemically dissolved, and nickel flake is the result.

to apply old ones. The trouble was traced to the graphite that had been used to improve conductivity in the active material. Nickel in flake form suggested itself as a substitute, but no such thing had ever been produced before. It was in perfecting a process to manufacture it that the five years of exhaustive research was required.

During all this time customers reordered. Many said they were satisfied with his battery even though Mr. Edison was not. But nothing could alter his determination to allow no more batteries to go on the market until in 1908, with the sought-for improvement perfected, he knew, and was able to guarantee, that his battery would maintain a definite, specified capacity.

TRADE MARK Thomas A Edison

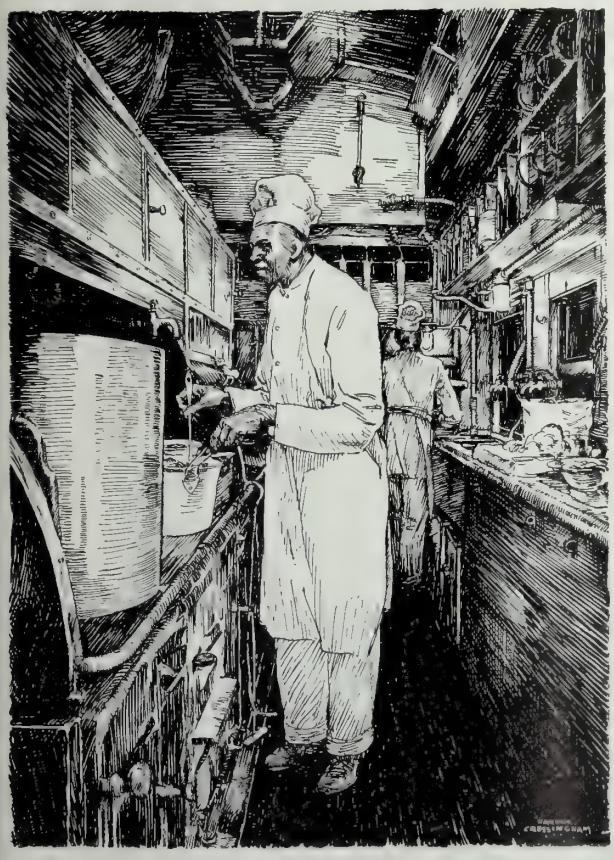
Edison *Steel Alkaline* Batteries give Economy and Control, Gas-Electric Rail Car, Signaling

EDISON STORAGE BATTERY COMPANY, ORANGE,

Dependability in Passenger-Train Service

A SMALL-CITY newspaper in reporting a severe storm that demoralized highway traffic said of the local railroad, "It was able to maintain a prompt service."

A magazine writer in describing a trip across the continent and back said, "Not once was a passenger train late."



Good car lighting not only contributes directly to the convenience and comfort of patrons, but also aids employees in their efforts to serve. And in the run of every train there are occasions when good lighting depends entirely upon the storage batteries in the cars.

Probably most railroad men will agree that the present dependability of passenger-train service is a result, not of any one thing, but of a long list of betterments in road and equipment, many of which were adopted for the primary purpose of reducing expenses.

It is interesting to note that the dependability of railway car lighting made possible by Edison Storage Batteries likewise is a result, not of any one thing, but of a variety of advances in battery design, and that the same advances serve also to reduce costs.

Dependability in Car Lighting Battery Service

For example, among the reasons for their dependability are steel construction, sustained capacity, and an electrochemical principle that functions without risk of injury either from the overcharging that is unavoidable in car lighting duty or from occasional or accidental conditions such as freezing, standing idle, short circuiting, or complete discharge.

Exactly the same characteristics are among the reasons Edison Batteries have been found to require so few repairs, thus reducing maintenance costs, and have proved so long-lived, thus reducing depreciation costs.

Dependability in Car Lighting, Multiple Unit Motive Power and Other Railway Services.

TRADE MARK
Thomas A Edison

. J. , , , BRANCHES IN PRINCIPAL CITIES

An Air View of the New Union Produce Terminal at Detroit.

Engineering Speed at Detroit

THE NEW Detroit Union Produce Terminal, said to be the finest plant of its kind in the world, was built and occupied in 100 working days, believed to be a record for construction work of this magnitude. The terminal cost about $3,500,000 exclusive of land. It was designed and built by the United Engineers & Constructors, Inc.

Ground was covered with snow and ice and frozen to a depth of two feet when work began February 21, 1929. June 27 the huge plant, with its two long buildings and miles of platform, roadway, trackage and piping, was completed and in operation.

Speed like this, producing the terminal weeks ahead of schedule, was the result of team-work, one central control, knowledge of the best markets for, and the expediting of materials.

The terminal was built for the Green Real Estate Company, which is owned jointly by the Pennsylvania Railroad, Wabash Railway and Pere Marquette Railway. Through its connection with the Union Belt of Detroit it may be served by all railroads coming into the city. It is being operated by the Detroit Union Produce Terminal Company.

There are two buildings 70 by 1,044 feet of two stories, concrete and brick, containing huge display space, general offices, auction auditorium, telegraph offices, space for a branch bank, restaurant, etc.; a mile of platforms at the buildings, two miles of inspection and teaming platforms. The completed project contains 70,000 square yards of concrete pavings, the equivalent of seven miles of 18-foot highway; ten miles of tracks; three miles of yard drains and sewers; power house; stevedore building; incinerator building, and facilities for icing cars anywhere in the terminal. More than 3,200 men were employed, 331,500 bags of cement, 54,000 cubic yards of concrete were poured, 30,000 in one month. The terminal was partly occupied in 84 days, and completed in 100 working days.

A Short, Short Line 100 Years Old

The Pontchartrain Railroad, probably the only railroad in America where the human eye can see from one end of the line to the other, celebrated its one hundredth anniversary January 20.

"Smoky Mary," as the lone old engine has become affectionately known, drew her two cars back and forth as usual from Pontchartrain Junction to Milneburg, a distance of 4.96 miles, snorting her scorn at scoffers.

Once a proud pioneer line heavily patronized by pleasure seekers headed for the resorts at Milneburg, the Pontchartrain has been losing business to the automobiles until its operation now is continued only so that its parent line may hold a part of the right of way for other purposes.

Ticket Printers in Germany

The German State Railway has installed 1,650 ticket-printing machines in its more important ticket offices. These machines can be adjusted with a movement of the hand to print any ticket required, including the price. The railway now sells one billion tickets yearly.

Storage for Fruits and Other Perishables in Large Quantities.

Fast Work on the Detroit Tunnel

Private Initiative Building An Under-Water Driveway to Canada

By George W. Early

Forces Working in the Shield Boring for the Detroit-Canada Tunnel.

THE GENIUS of modern engineering skill is rushing to completion the first international vehicular tunnel under the Detroit River, joining the United States and Canada. This subway is unlike any other in the world, introducing new efficiency to transportation, and blazing the way to economy in movement of heavy traffic in many communities.

The Detroit-Canada tunnel is the first in the history of such projects that was constructed on dry land, floated to the site like a ship, and launched to the bottom of the river it is to span. It is the first tube to be projected and completed in this country that is likely to be finished within the estimated cost. And, what is most interesting of all, it is the first tunnel designed, projected and completed as the result of private initiative, which backed its dream with the necessary cash.

For a generation past men have dreamed of the day when a new short transportation artery might link Detroit with the border cities in Canada. Detroit has grown by more than 50 per cent in the last decade; on the opposite side of the river the growth has been twice as great. Every year more than 2,000,000 motor vehicles and 18,000,000 persons were obliged to cross the waterway on antique ferries. The life of the metropolitan area was being suppressed for want of a shorter, quicker route.

Into the picture stepped Frederick Martin, dreamer, and former Salvation Army officer of Windsor, Ontario, who marshalled forces for the floating of a tunnel project. Indeed, it turned out that they practically did that, since, like the Israelites of old, they floated the tunnel to the site, submerged the giant segments, and are able to travel dry shod through and under the waters of the Detroit River. Not only did the engineers duplicate the scene of old, but they put a permanent dry passage across the waterway without in any way interrupting navigation, despite the fact that the Detroit River, on which the work was done, is the neck-of-the bottle which links the Great Lake chain, and is one of the world's most congested traffic arteries.

Transportation engineers will chalk up a number of achievements in the completed tunnel. For example, traffic stoppages will be handled with a dispatch rarely achieved on the surface highways, permitting a flow of 1,000 vehicles every hour in each direction. Elaborate plans are being worked out for the expeditious handling of this heavy traffic which will increase in volume monthly.

The same efficient traffic methods used with such success in the Holland Tunnel in New York will be followed, plus a number of advanced methods. The disabled vehicles will be removed with split-second dispatch, safeguarding every minute for the swift-moving underground traffic.

Ventilation for the Detroit-Canada Tunnel Is Provided Through This Structure.

The majority of stoppages, experience has shown Holland tube officials, may be expected as a result of drivers running out of gas. A total of 678 motorists were supplied with one gallon cans of gas during the first year the Holland Tunnel was in operation.

The total length from portal to portal of the international tube is 5,135 feet, and its length from street grade to street grade 5,845 feet. The maximum grade on the Detroit side is 5 per cent, and on the Canadian side, 3.95 per cent. The location of the terminals and the federal government requirements of 30 feet of water at the harbor lines and 45 feet in the channel, were the governing features in establishing these grades. Thus, the tunnel will be approximately a mile long between portals. It consists of a single passage way, 35 feet over-all diameter. The roadway is 23 feet wide, accommodating one lane of traffic in each direction, and a lane to spare for emergency cases.

Ventilation is supplied by two large buildings, one on each side of the river. The Windsor structure is 100 feet high and 50 by 90 feet in dimensions. It is a veritable glass house, in which no resident should cast stones. There are 3000 glass louvres through the vents of which fresh air is drawn by powerful blowers and then forced up from under the roadway of the tunnel. The vitiated air and exhaust gases are drawn up through the tube ceiling, driven back to the ventilating building, and expelled through two small stacks. There are a dozen fans, each 12 feet in diameter, and capable of changing 1,000,000 cubic feet of air every 90 seconds. Thus in a minute and one-half, the air in the long tunnel is completely changed. To safeguard against emergency, 50 per cent excess blower and fan capacity is available in each ventilation building.

While this tunnel parallels, in several respects, the famous Holland tunnel, yet the two are different. The Holland tube is nearly two miles long, has two lanes in each of its two tubes, which were bored by shield and drill through rock and river muck at a cost of $48,000,000. The Detroit tube, half the entire length under the river, has three traffic lanes in one tube, and the under-water section consists of eight giant steel-and-concrete segments, each weighing 8,000 tons, placed in a trench excavated out of the bed of the river, at a cost of $25,000,000.

The Holland tunnel is municipally operated by the New York and New Jersey tunnel commission. The Detroit tunnel is privately owned and operated, enjoying the cooperation of the municipalities served. The same toll charge obtains in each tube, 50 cents a car. Under private management, the Detroit tube should have as efficient operation as has characterized the Holland tubes. The owners, the Detroit and Canada Tunnel Company, Judson Bradway, president, are backed by American and Canadian financiers.

Although it was not expected that the Detroit tube would be completed and opened to traffic until the fall of 1930, engineers are now a little ahead of schedule, and hope to surprise the owners by opening the tunnel during the coming summer.

"Our method differs from those used previously in sinking tunnel segments," explained Major Burnside R. Vale, engineer in charge of the work. "Up to this time the segments have been sunk by filling them with water or sand and water. We place no extra weight inside the tube, but sink it by pouring cement on the outside until it comes down to the surface of the water. Then we speed it on its way to the bottom of the river by adding enormous concrete blocks that weigh 8,000 tons. When the divers have bolted it to the next segment, all we have to do is to knock out one of the bulkheads, and we have another water-tight link in our tunnel."

Each of the giant tunnel segments is 250 feet long with an inside measurement of 31 feet, and an outside measurement of 35 feet. The sections were built of 24-foot strips of heavy steel plate joined together by means of arc welding machines perfected by General Electric engineers especially for this project. The segments were built by the Canadian Bridge Company, at Ojibway, Ontario, six miles down the Detroit River from the tunnel site. Each 250-foot segment was constructed on regular launching ways, as is a steel ship. The sections were stuck together with one and three-quarter tons of welding electrode, along the 5,200 feet of caulk welding joints of the shell in 42 places, and 1,100 feet of butt welding to join the end seams.

After the joints were tested for possible leaks, bulkheads were placed at each end, and the huge 450-ton tube was launched into the river. Towed to the dock by tugs, some 4,200 cubic yards of concrete was poured in to form the lining and outside covering. Weighing about 8,000 tons, the shell was then towed up river to the site and sunk into the trench excavated from the bed of the river.

Steel towers were erected on top

Building One of the 250-Foot Steel Tunnel Segments on Launching Ways.

of each floating segment, which gave the engineers "sights" with which to "shoot" the gigantic charge to the bottom of the river, hitting a target 65 feet below the surface. And this was done with the precision one associates with watchmaking. A leeway of only one inch was allowed in the matter of possible error, yet this was not needed.

The approaches from the Detroit and Windsor sides were bored by the largest shield ever used in North America. The tunnel from the corner of Randolph and Atwater streets, Detroit, to the river edge, 466 feet in length, was completed early last summer, and the shield moved across the river to bore the 986-foot approach to the river from the Canadian side.

The giant shield, 35 feet in diameter and 15 feet long, resembles a curious overgrown burrowing animal. Its teeth and claws are the 110 men called "muckers," working in three eight-hour shifts, whose task it is to dig away the dirt from in front of the shield with small power shovels. After the dirt has been removed, the shield is driven forward 30 inches at a time, by means of hydraulic jacks that exert a pressure of 150 tons each. To make the resemblance to a prehistoric beast the more striking, a long tail projects from the posterior end of the machine. This prevents the roof from caving in until the steel lining and concrete inner lining is in place. Concreting starts as soon as the shield has moved up far enough to permit shoving the 25-foot form into position.

Toronto Terminal Opened

Toronto's new terminal, considered by transportation engineers one of the world's model railway projects, which permits the routing of fast trains into the union station over a large viaduct, has been opened, a $40,000,000 program of improvements in making Toronto one of America's leading railway centers. The union station costing $7,000,000 was opened in the summer of 1927. During the intervening two and a half years trains have been operated on temporary low-level trackage pending completion of the vast viaduct scheme. Six tracks have been thrown open on the viaduct level, and before the end of 1930 there will be a dozen tracks to care for the more than 200 trains arriving and departing daily.

The viaduct is three and seven-tenths miles in length and 300 to 400 feet wide and carries the six lines of passenger tracks 17 feet above the street level, and into the new station. Before its construction a similar number of rail lines separated the city from valuable harbor sites, crossed only by dangerous grade crossings. Incidentally, another transportation era has opened in Toronto, since some $40,000,000 is to be expended in deepening the harbor and making valuable land along the water front with dredged material, in creating a new rail-and-sail port.

As part of the general railway and harbor development scheme, the Canadian National Railways have constructed two run-around tracks over newly-made land, to carry freight traffic clear of the passenger station, and branches have been ramped down to give adequate freight sidings to the industrial districts. The entire Canadian Pacific coach yard has been elevated to leave a right of way for motors and trucks to pass through a 700-foot subway, 66 feet wide and 14 feet high. These two projects represent an additional expenditure by the two railway systems of $8,000,000.

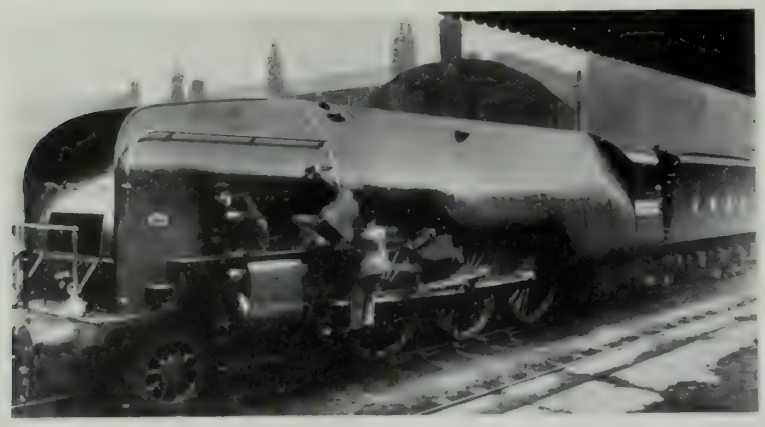
Within the next year six or eight more tracks will be completed on the viaduct system. All railway tracks, including the coach yards and sorting yards, have been raised above the street level.

The Canadian Pacific high-level enginehouse is another large project which has been completed, and the six-mile freight viaduct is in use, although it was only started, so far as subways were concerned, in 1927.

Long Ride, Long Ticket

A railroad ticket eighty-three inches long, or almost seven feet, was issued Jan. 13 to Robert M. Davis, statistical editor of the McGraw-Hill Publishing Company. This was the longest strip ever sold to an individual by the Pennsylvania Railroad in New York.

Mr. Davis went first to Savannah, the first of 35 cities he will visit as chairman of the special committee on information of the national advisory committee on the census of manufactures and distribution selected by Robert P. Lamont, secretary of commerce.



This Is England's Latest Locomotive, Called the "Hush, Hush" Because of the Peculiar Sound Made by the Exhaust.

England's High Pressure Locomotive

Here we see the new type of locomotive developed recently by the London & North Eastern Railway for express-passenger business. The design was approved after much experimenting with a model of the engine in a wind flume where air currents of speed were created up to 50 miles an hour.

The locomotive has three boilers, boat shaped at the front, which work as one. It possesses the unusually high boiler pressure of 450 pounds per square inch, which has never before been attempted with any British locomotive. Such a pressure requires steel castings for the horsepower cylinders which are 12 inches in diameter. The outside low pressure cylinders of cast iron are 26 inches in diameter. Hitherto the pressure of locomotives for British railways has been between 200 and 250 pounds per square inch. The object of using high pressure is fuel economy. The locomotive has a 26-inch stroke and is a 4-cylinder compound.

The 900-gallon tender is fitted with a corridor, essential for non-stop runs. The locomotive has a 4-6-4 wheel arrangement, known as the Baltic type. This is the first tender locomotive with this wheel arrangement to be constructed and operated in Great Britain. The six-coupled driving wheels are 6 feet 8 inches in diameter.

The engine has a four-wheel bogie at the front with two sets of driving wheels, a pair of trailing wheels, a radial bogie and a Bissell truck attached. This, in addition to the pressure mentioned, indicates that high speeds will be attained. The weight of the locomotive with its tender is approximately 170 tons.

The smoke stack is sunk within the casing plates, which are arranged to throw the smoke upward and clear of the driver's view. Tests will take place for two or three weeks, after which a trial will be made from London to Edinburgh via Newcastle-on-Tyne and on the East Coast Railway.

Box Cars Built Wrong He Says

George M. Cornwall, successful lumberman of Portland, Ore., for 40 years, says his one remaining mission in life will be to have roofs on freight boxcars hinged. The present "side-door Pullman" is a most awkward freight carrier, he asserts, especially for lumber, and to a lesser degree for much other freight. With removable roofs boxcars could be loaded and unloaded with cranes just as in loading a ship. Such cars are in use now in Sweden, Cornwall says. And in Argentina live stock freight cars have end instead of side doors. Animals are loaded from the end of the train, cars being closed as fast as they are filled just as in loading a circus. It is not only more speedy but more humane.

Motorist Didn't Think

George A. Brooks, 45, conductor on the Central of Georgia railway's electric train between Barnesville and Thomaston, Ga., is at a private hospital in Macon suffering from a badly crushed left leg, the result of a peculiar accident at Barnesville, Ga.

The electric train had just met the passenger trains at Barnesville and was preparing to return to Thomaston, the terminus, where the conductor resides. He was standing on the front steps of the car, about to step off to throw a switch, when an automobile crashed into the front of the electric train, pinning Brooks between the automobile and the railroad car.

Learned in America

One hundred traveling schools for employes have been arranged by the German State Railways. Old sleeping cars have been altered to contain 36 seats for the pupils, a room for the instructor and room for the teaching material required. Most of the cars are fitted out with such material for all branches of railroad operation, but some are devoted to special branches. By this means instruction can be given simultaneously in different divisions without undue loss of working time.

Died On the Job

Slumping half unconscious in his cab with his train speeding westward with more than 50 passengers aboard, R. M. King, veteran Southern Railway engineer, managed to bring the train to a stop one mile west of Millport, Ala., the night of Jan. 8, just before he died.

W. T. Davis, fireman, said the engineer forced the throttle to the last notch and brought the train to an abrupt halt just before he slumped to the floor of the cab. King had been an engineer on the Southern for more than 30 years.

What Do You Do At Night?

Time is the one thing that can never be retrieved. One may lose and regain a friend; one may lose and regain money; opportunity once spurned may come again; but the hours that are lost in idleness can never be brought back to be used in gainful pursuits. Most careers are made or marred in the hours after supper.—*New York World.*

The East Wind

A threat to the efficiency of the South Manchuria railway has been met by the removal of all Mah Jongg sets from the clubs operated for employes of the line. The game had caused all night sessions among the Japanese employes.

"We are ruined not by what we need, but by what we think we need." —*Henry I. Doherty.*

'Tis more noble to forgive, and more manly to despise than to revenge an injury.—*Franklin.*

A New Branch for the N. & W.

Tapping the Coal and Lumber Resources of Mingo County, W. Va.

By Parkham Holmes

THE THIRD of three big engineering projects recently undertaken by the Norfolk & Western is the building of a branch line railroad into the heart of Mingo County, W. Va., tapping the enormous coal and lumber resources along and near the Guyandotte River. The other two construction projects on the company's program are the rebuilding of the Big Sandy & Cumberland Railroad, from Devon to Grundy, Va., and the improvements at Columbus.

The new branch line will be 10½ miles long. It will leave the main line at Wharncliffe, running northeast to Gilbert, W. Va., where it will connect with the Virginian and Chesapeake & Ohio Railways. Wharncliffe is 32 miles east of Williamson and 75 miles west of Bluefield. The entire project will cost $2,700,000. It is expected the new line will be ready for traffic by January 1, 1931.

Tentatively, the new branch has been named the Guyandotte & Tug River Railroad because it will connect the Guyandotte River, which the new line will touch at Gilbert, and the Tug River, which parallels the main line at Wharncliffe.

Work was started December 1, 1928, under the supervision of W. P. Wiltsee, chief engineer. J. W. Raitt, assistant engineer, Pocahontas division, assisted by W. A. Neff, resident engineer, and a corps of 11 men, are in direct charge of the work. The grading and filling and the actual construction work is being done by W. W. Boxley, Son & Co., contractors.

The new branch line will be well graded and easily accessible to all kinds of traffic. That is, perhaps, the most distinctive feature of the project. Indeed, the Guyandotte & Tug River Railroad will follow almost entirely a water level route. Immediately after leaving Wharncliffe the line follows Ben Creek for about four miles at an average grade of 1.2 per cent until it reaches Staggerweed Mountain, through which a tunnel, 3,990 feet long, is being driven at level grade. From the north portal of this tunnel, the new railroad will descend to Gilbert, following Gilbert Creek, at the rate of 47 feet to the mile, or at a grade of nine-tenths of 1 per cent.

Actually, the new branch will connect with the Virginian Railway a short distance southeast of Gilbert. The Virginian is building a line from Elmore (near Mullens) to Gilbert and here, at the proposed junction point of the two lines, a yard, consisting of ten tracks with a capacity of 1,380 cars, will be built. This yard probably will become the assembling point for traffic from the Guyandotte River Valley, and the Virginian coal which heretofore has been delivered to the Norfolk & Western at Matoaka will be more quickly and easily routed through this yard over the direct route via the Guyandotte & Tug River Railroad to the main line at Wharncliffe. The new branch will connect with the Logan branch of the Chesapeake & Ohio at West Gilbert.

North Portal of Staggerweed Tunnel, N. & W. Ry.

Although the Guyandotte & Tug River will follow a water level route for the most part, the roadbed is being laid along the mountain sides. For this reason a large amount of excavating and filling is being done. Six steam shovels, and five "dinkey" trains are used.

The most prominent feature of the project from a construction standpoint, perhaps, is the construction of the 4,000-foot Staggerweed Tunnel. This tunnel will be of the concrete type. When completed, the inside height will be 27 feet and the width 17 feet. The north portal is situated near the Adams Fork of Gilbert Creek while the south portal is at the Laurel Fork of Ben Creek. When the new tunnel is completed 115,000 cubic yards of rock and dirt will have been removed through its portals. The greater part of this rock and dirt will go into the filling of an adjoining double-deck box culvert bridging Gilbert Creek near the north portal. The new culvert will be 276 feet long, 14 feet high and 20 feet wide. It will carry the channel of Gilbert Creek on its bottom deck and the county roadbed on the top deck. This type of culvert is new in railroad construction work. It will take the place of a bridge across Gilbert Creek. It will be the first double-deck culvert ever built on the Norfolk & Western, and 3700 cubic yards of concrete will be necessary to construct it.

A large fill and cut through almost solid rock is being made at Gilbert. About 30,000 cubic yards of material were used in this fill, and an equal amount will be required on the other side of the cut. The line will extend around the mountain at this point to the new yard where it will connect with the Virginian Railway.

Two bridges will span Ben Creek carrying the Guyandotte & Tug River Railroad between the tunnel and Wharncliffe. One of these bridges, about 200 yards from the south portal of the tunnel, will be built of steel with concrete abutments, and will span both Ben Creek and the county road at that point. It will be 170 feet long and 25 feet high. The other bridge across Ben Creek will be about one and one-half miles north of Wharncliffe and will be similar

At the Left Side, the New Line Running From Wharncliffe Station to Gilbert.

in construction and dimensions to the first span.

Because of the heavy rains and the constant danger of washouts, all of the filling on the new branch line is being protected at strategic points with large concrete drain pipes 48 inches in diameter. Near Pound Mill Branch a special protection is being built in the form of two lines of this pipe under the heavy filling. These two lines of drain pipe will take the place of a bridge.

Southern Courtesy

Engineer George W. Parrish, Columbia division of the Southern Railway, was surprised to receive a letter a few days ago from a woman motorist at Winnsboro, S. C., who had failed to "Stop, Look and Listen" and whose car had miraculously escaped being demolished a few days previously. The letter read, in part, as follows:

"I know you think me ungrateful for not stopping to thank you for saving me from a terrible wreck a few days ago when my car choked on the track at crossing near Winnsboro in front of your approaching engine.

"Really words are inadequate to express my appreciation, because nobody but the ones in my car can ever appreciate your quick thought and action. It looked impossible to stop. I was absolutely helpless and waited to see the engine demolish the car. When you stopped your engine, I was simply stupid for hours from the scare."

Engineer Parrish is regularly assigned engineer in through freight service between Columbia and Charlotte and has been in the service 25 years.

Two Old Timers Retire

Two veteran employes of the Northern Pacific Railway who had direct participation in the driving of the last spike in September, 1883, which completed the transcontinental line of the Northern Pacific Railway, retired from active service with that railroad February 1. Both have reached the retirement age of 70 years. These two pioneer railroad men are John Jones, locomotive engineer, who has a record of 46 years and 5 months of continuous service, and George A. Fellows, freight agent at Spokane, who has completed 44 years and 4 months of service. Jones went to work in the summer of 1883 at Helena and spiked rails between Missoula and Gold Creek, Mont. He was one of the men who spiked the last rail laid in construction of the Northern Pacific main line. His next position was at Sprague, Wash., assembling locomotives which had been shipped around Cape Horn for service on the newly built line. He then became a locomotive fireman, and soon after became an engineer. His experience runs through the period from the time of the small wood burners to the present day modern locomotives, equipped with superheaters and all the other latest devices. Fellows began employment with the Northern Pacific in May, 1883, at Cheney, Wash. In September of that year he was one of a limited number of employes who assisted in blocking the special trains of President Henry Villard over the Idaho division, spacing each train 30 minutes apart all the way from Gold Creek to Portland and return to St. Paul at the time of the gold spike ceremonies at Gold Creek. Fellows was promoted to freight agent at Spokane in 1919, which position he held until his retirement.

A New Life Guard Idea

A new type of motor lifeboat, specially designed to go to the aid of airplanes that may come down while crossing the English Channel, is to be stationed at Dover by the Royal National Lifeboat Institution. It will be the first British lifeboat to be fitted with wireless. It will be the largest and fastest lifeboat in the world. The boat will hold 50 persons, will be lighted by electricity, and have a searchlight and line throwing gun.

Cutting Through the Solid Rock Near Gilbert.

A New Engine Terminal for the S. P.

Direct Steaming Plant at Los Angeles Costing Nearly $700,000

By W. J. Taylor

A COMPLETE locomotive terminal including two enginehouses, storehouse, shops and other facilities costing nearly $700,000, is under construction on nine acres of Taylor yard, Los Angeles, by the Southern Pacific Company. This is the first contribution of that company in its $50,000,000 building program for Southern California. The project is expected to be finished in June.

An important feature of the new terminal will be the modern direct-steaming facilities which permit engines to be blown down, washed, and made ready for the road in a few minutes compared with the old laborious, time-consuming and smoke-baffling method now being discarded by forward-looking managements as fast as the evasive net return makes such improvement possible.

The new terminal in Taylor yards on San Fernando boulevard will be equipped with the most modern enginehouse, machine shop, storage buildings and tanks to service and repair all freight and switch locomotives running in and out of Los Angeles.

The largest and heaviest locomotives on the Southern Pacific system will be serviced at the new quarters, moving in and out of the 99-foot pits on an electrically driven turntable 120 feet in diameter.

In addition to the enginehouses, the new construction includes a machine shop, equipped with the most modern machinery and a ten-ton traveling crane; storehouse, powerhouse, fuel houses, 350,000-gallon water tank, 30,000-barrel oil tank and all necessary trackage and concrete roads.

Drop jacks will be installed in three of the engine pits, permitting removal of all wheels of both engine and tender for repairs.

Enginehouse No. 2. This and No. 1 are Direct Steaming Plants.

Seems Fair Enough

A decision given at Fresno, Cal., Feb. 2, in the municipal court following, doubtless, the decision of the United States Supreme Court a year ago, held the owners of a motor vehicle liable for failure to "Stop, Look and Listen." Judgment was given the Southern Pacific Co. and George Maas, a vineyardist.

When a Southern Pacific train collided with a truck and trailer at a public road crossing, the gasoline was ignited and fire destroyed part of the train, track and adjoining vineyard. Investigation established clearly that the truck driver had driven on the railroad crossing without taking the precaution to stop, look and listen. The court rendered decision against the transfer company which was ordered to pay for the damages sustained by the railroad and the grape grower.

Dining Car Housekeeping Rules

C. W. G.

Samples of butter, milk and cream used by the commissary department of the Southern Pacific Company are sent periodically to the nutrition department of the University of California for test. Particular attention is paid to cream. The state requirements call for 18 per cent of butterfat, but the Southern Pacific commissary will not use any cream having a butterfat content of less than 24 per cent. Dairies put cream for the commissary department into non-refillable three-quart tins, send it in refrigerated containers to the commissaries, where it is kept in refrigerated compartments until issued to the dining cars and ferry boat restaurants, hotels and railway clubs. These tins cost the company about 10 cents a piece, and as they cannot be used again for cream they add much to the expense of operation.

Butter is specially packed at the creameries in double cartons, cut into the small cubes, is touched by no one until it reaches the consumer at the table. The imprint of a fork used to pick up the cube must appear on every cube of butter. The same quality of butter used on dining tables is used in the commissary bakeries. The commissary uses about 700 pounds of butter and 550 gallons of milk daily.

For a three-day run a dining car is stocked with over 2000 pieces of linen; this includes 1000 napkins, 220 tablecloths and 250 doilies, be-

Machine Shop for the New Engine Terminal at Taylor Yard, Los Angeles.

sides aprons and waiters' coats. All linen, fresh or soiled, is taken from the car at the end of a run and a new stock issued. As a sanitary measure the napkins as they come from the iron at the company's laundry at Oakland, are folded and placed in paper cartons, so that they go from the ironers to the passengers untouched. The Southern Pacific buys "Old Country" linen of the finest flax, and good wearing quality. Company specifications call for so many threads to the square inch, and such and such a count of threads for warp and weft. When the company receives linen samples they are sent to the bureau of standards in Washington for analysis.

On the Front Page Some Day

Several planes which have seen long and varied service are still being used in Germany, according to a report to the department of commerce. The Junkers "FI3" originally named "The Nightingale" and still carrying the first German identification marks, "D 1", has completed ten years of flying service during which time it has outlived six motors. It has made 2,543 flights, has been in the air for 2,403 hours and has covered approximately 350,000 kilometers all over Europe. Another German plane has more than 3,140 hours to its credit and there are nine other planes which have been more than 2,600 hours in the air.

New line of the International Railways of Central America connecting Puerto Barrios, on the Caribbean, with San Salvador, was officially opened on December 28, 1929, and regular service was started on January 1, 1930.

At the Left, the Machine Shop; Center, Engineho use No. 1, and at the Right, Enginehouse No. 2.

Editorial Comment

Well, What's The Answer?

A LETTER recently received by the department of commerce from a woman in California was referred to the Interstate Commerce Commission for answer. All this "question-box" wanted to know was:

1. What are the problems of the railroads?
2. Under what ownership shall railroads be run?
3. Shall railroads consolidate?

It Ought to be National

The state code commission of Mississippi has urged the legislature to repeal more than 2,500 obsolete or useless laws. The present code of that state contains 9,600 sections. The proposed code would reduce this to 7,103 sections, and the state probably could get along better with another cut of 50 per cent. Why would not this procedure be a fine thing for the entire country?

The Regulation of Starlings

The national capital is having a dreadful time over starlings, a pestiferous bird which came to this country from England and which, more than our own sparrows or blackbirds, has proved itself a nuisance. District officials and the Washington newspapers have tried every imaginable scheme to drive out the starlings, but without success. The birds work during the day in Maryland and fly to the city to spend the night. This seems to be interstate commerce. It might be well to suggest to Senator Capper, chairman of the district governing committee, that the regulation of starlings be left to the Interstate Commerce Commission. It should be remembered, however, that the starling is a destroyer of bugs which ought to make it welcome in Washington, especially when congress is in session.

One Day for Recreation

Nearly 6,000 Pennsylvania Railroad shop employes in the western and central regions of the system, who heretofore have worked seven days a week were placed on a six-day week Feb. 1 as the result of agreements with the regional committees of shop craft employes. Labor certainly is coming into pleasant days. Due to the nature of their work in connection with the operation of Pennsylvania trains 24 hours a day every day in the week, the shop employes affected have heretofore been on duty every day. They will now have one relief day a week. Although several thousand shop employes in the eastern region are officially on a seven-day working schedule, so few actually do work seven days a week that no real need for a formal relief day exists.

This weekly relief day not only will provide an opportunity for rest and recreation for these employes, the company's representatives say, but it will also give employment to an additional number of men in line with President Hoover's policy. It is also in line with similar action taken during recent years by the Pennsylvania in providing a relief day every week for signalmen, telegraphers, clerical and station forces. Working regulations covering the new relief days were negotiated under the Pennsylvania's employe representation plan between the elected shop crafts committees of the Pennsylvania employes in the western and central regions and the management of the railroad.

Sic Transit Gloria Kentucky

States, like men, quite frequently bear honors to which they are not entitled. The wheat-growing regions of the Middle West contribute to the fame of Minnesota as one of the greatest flour milling states in the union. Missouri, Iowa, Kansas, Nebraska and Illinois, it has been disclosed, grow and ship into Kentucky most of the seed that has made that state known all over the country as the great bluegrass producer. In song and story it is famous. It remained for the Interstate Commerce Commission recently to destroy the popular hokum.

That complacent tribunal has dismissed a complaint alleging that rates on bluegrass seed from the states mentioned to points in Kentucky were excessive. One by one the illusions of life are betrayed.

Air Rates Coming Down

Many persons believe that the cost and not the supposed danger, or the timidity of the public has been responsible for decreased air liner traffic. A man had to value his time rather highly when he forked over $345 for an air or air-rail passage from the Pacific Coast to New York. That rate has now been cut to $159.92 for air-rail 48-hour service operated by the T. A. T.-Maddux company in conjunction with the Pennsylvania and Santa Fe railroads. This service began in July, last year.

Additional reductions in mileage rates between all cities on the regular T. A. T. routes are based on five cents a mile, compared with previous average rate of 12 cents a mile. The new tariffs became effective January 14.

The rate of $159.92 for the trans-continental route compares with a railroad rate, including Pullman charge, of $162.02 on extra-fare trains covering the same distance in approximately 90 hours, and constitutes the first coast-to-coast air tariff priced below the corresponding railroad charge. An example of the substantial reductions effected in shorter flights is offered by comparison of the previous charge of $110 between Albuquerque, N. M., and Los Angeles, a distance of over 600 miles, and a rate of $35.30 which went into effect January 14. The latest reports, received Feb. 1, indicate a very marked increase in passenger traffic under the reduced fares.

Similar reductions in air rates on European-Continental lines are reported by the department of commerce at Washington. The Imperial Airways operating the London-Paris and Paris-London services have lowered the fare on the 8 a. m. air liner to Paris from £4 15s (approximately $23) to £3 10s (approximately $17). The fare includes motor-car journeys from the centers of the cities to the air-

ports at either end. The new fare is less than that on a first class boat and train between London and Paris on the Dover-Calais route. On the air liners flying between London and Switzerland the fare is now £7 instead of £7 10s.

When an air service for passengers was established between Los Angeles and San Francisco in May, 1928, the fare was $50. Now it is $21.50. The air rate to Kansas City from Los Angeles, established last June, was $175. Now it has been cut to $88 by the T. A. T.-Maddux line. This followed a reduction to $120 by a competitor. Railroad fare from Los Angeles to Kansas City is $93.

The air trip from Los Angeles to Kansas City is made in 13 hours, and the air-rail transcontinental trip in 47 hours. If the public takes advantage of these low fares during the next two months in sufficient numbers, the rates, the company says, will be retained at or near the same levels.

The cold facts are that many persons eager to fly could not afford to pay the high fares. Colonel Lindbergh, who has a reputation for pretty sound judgment, sound enough at all events to impress some of the most important men in the nation, recommended that rates be lowered.

Of course competition had much influence in bringing about these reductions. Lindbergh does not believe, nor does any other experienced flyer, that the public is afraid to fly. C. M. Keys, until recently president of the T. A. T., did not exaggerate when he said recently that three-fourths of the dangers of flight in the early stages had been eliminated. No form of transportation by land or sea is absolutely safe, but it is significant that the insurance companies no longer except the risks of aviation from their policies.

The Deadly Motorist

When eight or ten persons die in an airplane accident the whole country is horrified. But read this as an off-set:

Motor vehicles were responsible for the accidental death of at least 31,500 persons in the United States during 1929, according to figures just made public by the National Safety Council.

This is by far the largest annual toll since the automobile became an accident factor and represents a 13 per cent increase over the record of 1928. Motor vehicle registrations increased only 8 per cent during the year.

The figures are based on reports from 31 states, covering, in most cases, an eleven months' period of 1929. They have been substantiated by reports from the Metropolitan Life Insurance Company, whose mortality experience has been found to be a reliable index.

More than 50 per cent of the victims were pedestrians. The total will place motor vehicle accidents as representing approximately one-third of all accident fatalities in the country. The figure for 1929 for this type of accident is nearly three times what it was ten years ago.

Neither the increased population of the United States nor the increased automobile registration wholly accounts for the rapidly growing death toll. Ratios of deaths to population and motor vehicle registration increased considerably over last year.

Five states, Oregon, Rhode Island, Wisconsin, Delaware and Vermont, showed slight decreases, based on 11 months' reports.

California, on the other hand, showed a 20 per cent increase, based on a nine months' comparable period. New York and Ohio, with an 11 months' comparable period from which to judge, showed approximately a 17 per cent increase.

For the entire United States the records indicate that approximately 2,900 persons were killed in motor vehicle accidents during August of 1929. This loss of life is more than 23 per cent greater than the number killed in August, 1928, and 8 per cent greater than the number killed in July, 1929. Ninety-three persons were killed on the average every day in August, 1929, as compared with 76 persons killed every day in August, 1928.

In 11 states where the motor vehicle departments have made a careful study of the problem, it has been determined that approximately 10 per cent of those who drive motor vehicles are unfit either physically or morally to operate an automobile. In these states, with a total of over 7,000,000 registrations, 77,700 licenses to operate motor cars were revoked.

One person is accidentally killed every five minutes in the United States, 11 every hour, 273 every day and approximately 100,000 every year.

The total number of American lives lost in the World War from all causes was 77,118. In the next eight years following the war 137,017 persons were killed by automobiles in this country. There were 221,059 persons wounded in the war who did not die, but in the eight years afterward more than 3½ million persons were injured by automobiles, 1480 per cent more than in the World War.

The Faithful Secretary

It might have been wonderfully interesting, had it been possible, to look into the mind of Miss Eva Raney when she prepared for her last day's work for the Pennsylvania Railroad, the morning of February 1. That was her retirement day after 42 years' service as a stenographer for one company, her entire business life! When a man gives 40 or 50 years to one job, with one company, we who are wise know the reasons, one of them being that he married early, surrounded himself with a flock of responsibilities, and never thereafter had the gumption to separate himself from the pay-roll. There are other reasons, but let them go.

But when a woman sticks for 42 years to stenography for one company the announcement of her retirement gives rise to philosophical reflections, some of which we shall not record here. What a fund of information this woman must have about a number of things. Doubtless by this time she has discovered that *benefited* should be spelled with only one "t" and that a capital letter is not necessary on the word "gum," which puts her in a class by herself. She may even have learned that "company" and "board" are collective nouns, and that adverbial modifiers preceding verbs very often result in split infinitives. Indeed, it is not too much to say that Miss Raney has acquired an education so invaluable that she ought to be put in charge of a special department for training others in the work she has done so long and so satisfactorily. It is difficult to understand how the Pennsylvania Railroad officials can contemplate calmly the loss of this employe.

It would be interesting to know just what this

woman thinks about the economic independence advocated so briskly by many of her kind. Has her life been free from care? Has she found special and compensating delight in freedom from the necessity of asking any man for a dollar when she needed it? For all we know to the contrary Miss Raney may, all these years, have had the duty of caring for some dependent, but if she has been spared this burden which, of course, she would have borne with the unselfishness characteristic of women, she has acquired a world of information about life which should have fitted her to write an interesting book on "Bosses I Have Known," or "Forty Years Correcting Men's Mistakes."

One thing is certain: No auditor could tell Miss Raney very much about freight traffic, and it is possible she might enlighten the stodgy Interstate Commerce Commission in Washington. But, all other somber reflections aside, men who have struggled all their lives with stenographers, and we are speaking figuratively of course, are unanimous in declaring that the competent office woman, the woman more concerned with her job than with invisible stockings and visible knees, is the world's chief joy, a jewel beyond price. Miss Raney will leave a great void in the freight auditor's office. No one ever can take her place. She has never had to bathe the children, mend their clothes, wipe their noses and start them off to school; she has never had to fight for a share of the monthly pay check. She may have known a great peace beyond the understanding of ordinary mortals. We hope so. Good luck, Eva.

The Layman's Mystery

The United States Supreme Court says the United Railways & Electric Co. of Baltimore is entitled to a return of 7.44 per cent "on the value of its property as established by the commission," meaning the state board. This board has promised, very considerately, to obey the court's order. Says the chairman, Mr. West:

"The court has decided that the railway is entitled to a return of 7.44 per cent on the value of its property as established by the commission. The company is, however, asking a 10-cent flat fare. It may be that this will not yield a return of 7.44 per cent but as that is the rate of fare which the company has asked that is the rate of fare which will be collected by the company."

Among the many mysteries embittering the life of this department is that concerning the governmental power which says that steam railroads will be permitted to earn a return of 5¾ per cent; the power which was directed ten years ago by congress to approve rates making such a return possible, and which never has obeyed such direction; and the same power which is instructed by congress to see to it that if the railroads should earn more than 6 per cent the power referred to shall take 50 per cent of such excess and put it into a fund for the relief of sick and distressed brother railroads. This is not the precise language of the act but all railroad executives understand it. The mystery, in any language, is just as deep: Why is the United Railways & Electric Co. of Baltimore entitled to a return of 7.44 per cent while no railroad may have more than 5.75? Money, materials and supplies cost street railways no more than they cost the steam railroads. The United Railways' wage schedule is lower than the steam lines have to pay. Comparatively, its tax bill is no higher. It has more passengers than it can carry properly while railroads haul half empty trains.

Of course all these things are clear and understandable to courts and lawyers, perhaps. But to a layman they remain, as they always have been, an impenetrable mystery.

No News In This

Cycles of wet and dry years cannot be predicted accurately, the chief of the weather bureau, Dr. Charles F. Marvin, advised the house committee on appropriations at a recent hearing.

Bureau figures do not enable forecasts for any length of time, Mr. Marvin told the committee. Forecasts of precipitation are based on maps of conditions over the Northern Hemisphere. They are made twice a day and are based on momentary conditions over the entire hemisphere.

"The weather does recur irregularly in periods of wet and dry, warm and cold spells, but if you assume that there is a cycle of 15 or 20 years, for example, you find your expectations fail to materialize," he said.

Air Traffic Still Grows

A report from the Aviation Corporation for 1929 shows rather convincingly that the public's confidence in aerial navigation has not been adversely affected by accidents. The planes of this corporation flew 5,657,929 miles in scheduled operation compared with the 16,000,000 miles estimated by the department of commerce for all lines in the United States. The greater part of this mileage, 3,332,708 miles, was over the eleven contract air mail routes operated by the corporation's subsidiaries. The system includes the Universal Aviation Corpn., Southern Air Transport, Inc., Embry-Riddle Aviation Corpn., Colonial Airways Corpn., and Interstate Airlines, Inc., which extend from Montreal on the north and New York and Boston on the east to Atlanta and Brownsville on the south and El Paso and Garden City on the west. They serve 62 cities.

Passenger planes of the system flew 2,301,221 miles and carried a total of 20,659 passengers over the regularly-scheduled lines. The passenger operations, in most cases, represent only part of a year because several of the passenger services of the corporation were not started until the spring or summer of 1929. An independent company, reports that of the 2,000,000 persons who traveled by airplane in 1929, either aboard modern air transport sky liners or on private and taxi planes, 49 per cent were from the ranks of the business and professional world.

"This proves conclusively that the saving of speed is not a luxury but a vital necessity to those to whom traveling time means money," said the report. "Questionnaires sent to the various members of chambers of commerce and civic clubs tell us that one-half of the average successful, middle-aged business men in America have ridden in an airplane four times.

"Officials of the company believe that this fact proves that after the first ride the reliability of a licensed airplane and pilot increases the confidence of the air traveler."

See the Glass-Enclosed Cab on the Tender of the Engine? It's for the Conductor and the Head Brakeman. How About This?

NOT MANY railroading families in Canada have a finer record than the Rosevears. Going back in the days of the old Grand Trunk, their contribution to Canada began 75 years ago. With them railroading has become a family tradition and not only railroading but railroading with one system. The Rosevears have given the Canadian National Railways four generations of men. In the terms of years of service, they have given more than two hundred years of life.

September 26, last year, there was a family reunion at St. Lambert, Quebec. It was in honor of a man who had for decades been a figure of prominence in the community, a man who had been twice councillor of St. Lambert and four times mayor, who had been a pillar of the church, and who was, above all, a pioneer of the old, sturdy stock. But it was not because of these aspects of his history that his children, grandchildren and great-grand-children gathered around him that day. It was his birthday anniversary and on the birthday cake 92 candles gleamed. It was a proud day for everyone, for, although he lacked but eight years of the century, W. H. Rosevear could give even the youngest points in vigor and good spirits. And W. H. was not the first of the family who owed allegiance to the National System. His father before him was with that railway. Following him, three sons and a grandson carried on the tradition.

It was in 1854 that Matthew Rosevear of Bodmin, Cornwall, after 25 years' railway service in England went to Canada. He was under contract with the Grand Trunk Railway, and with that company he began his 30 years' service as a locomotive engineer at Hamilton, Ontario. With him was his son, W. H. Rosevear, then a lad of 16, who was also under contract with the railway.

In due time, the first of the line became locomotive foremen. In 1862 his son became mechanical accountant, and in 1890, general car accountant, his first years of service, 1854 to 1862, in Hamilton, and from 1862 to 1907 in Montreal. He retired in January, 1908, after working half a century and four years over for the railway, but he left three sons to carry on the family tradition, and he lived to see the fourth generation enter the railway service.

To the 84 years' service given by the two men from Cornwall was added, by the three sons, another 111 years. One of these sons retired in December, and another still remains in service. The story goes on with him and with a great grandson of the original Rosevear. The youngest of the line has already given six years' service to the system.

W. H. Rosevear Jr., gave 27 years to the Grand Trunk. He entered the mechanical department in 1877 and resigned in 1903 to go into the railway supply business.

A. E. Rosevear entered the service of the system in 1878 and retired last month after 52 years. He began his career in the mechanical department, later occupying the following positions: Secretary to the late Sir Joseph Hickson, general manager of the Grand Trunk; accountant, West Shore & Reading Despatch Lines, Detroit; freight claim agent, assistant general freight agent, assistant to the vice president of traffic, Grand Trunk Railway, Montreal; general freight agent, Grand Trunk Pacific Railway, Winnipeg; general freight agent, Canadian National Railways, Winnipeg.

The third son, J. M. Rosevear, who is now general comptroller of the system, was a clerk in the car department of the Grand Trunk at Montreal in 1897. In the same year he was transferred to the office of the auditor of disbursements. Between 1903 and 1906 he was traveling accountant and became chief clerk to the auditor of disbursements in 1906. Two years later he became auditor of disbursements for the Grand Trunk and the Grand Trunk Pacific. In 1918 he was appointed general auditor, in 1919 comptroller, and in 1923 general comptroller of the Canadian National System. His son, F. S. Rosevear, carried forward the tradition. He began his service as traveling accountant in 1923, and in July of last year became assistant for the Montreal Terminals construction.

The K. C. S. Makes a Novel Test

The locomotive shown here with a glass-enclosed cab on the rear end of the tender illustrates the story of an experiment now being tried by the forward-looking executives of the Kansas City Southern Ry. in trying to get the conductor, the head brakeman and the engineer closer together.

"It has been our belief," writes C. E. Johnston, president of the road, "that with the conductor and engineer associated closely together on the head end of a train the operations could be more successfully conducted, and an intercommunicating 'phone has been installed between the conductor's office and the engineer's cab.

"There are objections to the plan, inasmuch as it leaves only one man at the rear of a train, and from a safety standpoint, we cannot say just how this will work out. We have not contemplated the elimination of the caboose, since some provision must be made to take care of the rear brakeman. As before stated, it is entirely an experiment, and just what the possibilities may be remains to be determined."

As the Crow Flies

Mail-passenger planes fly 317 miles less between San Francisco-Oakland and Chicago than the train mileage and 451 miles less than the transcontinental automobile highway, show figures complied by Boeing System, operators of the air mail over this course.

Mileages are: Automobile, 2,394; rail, 2,260; air, 1,943.

Air mail cuts 301 miles off the rail distance between Los Angeles and Seattle, making the flight in 12 hours elapsed time against train time of forty hours. Comparative mileages are: Rail, 1,400; automobile, 1,274; air, 1,099.

—P & A Photo

Hangars Costing a Million Dollars Are Now Nearing Completion at Roosevelt Field, Long Island.

Cutting the Cost of Air Travel

Increased Mileage by Planes and Pilots in Future Competition

By J. E. Bullard

FEW PERSONS doubt now the prediction that eventually, and the day may not be far distant, air transport companies will be charging lower passenger fares and express rates than the railroads. Some indication is to be seen in the recent slashing of air charges in many parts of this country and in Europe also. Doubtless some, perhaps most of these companies, at least in the United States where there are no subsidies from the government, are losing money in a commendable effort to overcome the widespread slump in air traffic due partly to unfavorable weather, and partly to numerous accidents, so vividly dramatized in newspaper reports. Students of history, and those old enough to remember the tragic experiences of railroads in the 60s, know that steam transportation passed through precisely the same public clamor, and do not for a moment imagine that the future usefulness of aviation will be any more disastrously affected. The pioneers always have to bear the first heavy burdens. Air transport, all sensible and thoughtful persons know, is here, as we used to say of motor cars, to stay and serve.

Figures published by the department of commerce indicate that during the last six months of 1928 the average plane mileage was about 45,000 miles a year. There are motor vehicles used by salesmen and physicians that approach this mileage even though the speed of the automobile is materially less than half that of air planes, and the average speed that can be maintained on highways is more nearly a quarter of the average speed maintained by planes.

The actual operating cost of a plane is comparatively low, if in the operating costs we include only the expense due to making the plane fly, such as gasoline, oil, and piloting. Fixed charges are high and they are especially high if a relatively small mileage is flown each year.

In the present state of the industry it is hardly safe for a transport company to assume a plane life of even three years. The plane bought this year may be out of date because of better designed planes that come on the market next year. However, let us assume that the life of a plane can be set down as three years in regard to time, 250,000 miles in regard to mileage, and that engines have a useful life of 150,000 miles.

Figuring on this basis we must charge off the entire cost of the plane in three years whether or not it has flown its useful mileage. Suppose that the plane costs $30,000 new and the engines $18,000. Then if we figure six per cent a year as interest, and assume three years as the maximum life of the plane and 250,000 miles the maximum mileage that can be obtained from it, we arrive at the following fixed costs for the plane and engines per mile flown:

Plane Mileage per year	Fixed charges on plane and engines per mile
20,000	$1.09

30,000	.73
40,000	.55
50,000	.44
75,000	.29
100,000	.28
125,000	.27
150,000	.26
200,000	.22
250,000	.20

During 1928, according to the department of commerce figures, the average fixed costs based on the average mileage given would amount to around 50 cents a mile flown. If this same plane can be operated an average of around seven hours a day every day in the year, or 2500 hours a year, it can be scrapped at the end of the year, and only the new set of engines that were installed the latter part of the year salvaged, and yet the fixed cost will be but 20 cents a mile, or two-fifths of the fixed charges of the plane in 1928.

Many of the other costs fall in much the same proportion as the mileage per plane, mileage per pilot, and mileage for every other item of overhead is increased. For example, the department of commerce figures give 68 hours a month as the average number of hours flown per pilot. Still drawing upon the department of commerce figures we find that the base rate per pilot figures out at 2.8 cents a mile. If these same pilots flew an average of six hours a day 25 days a month, the base rate would drop to 1.3 cents even if the same amount as a base was paid them as they received. However, since a mileage rate was also paid them they would earn much higher salaries on the increased mileage.

For example, the average figure given is $463.51. Apparently around $450 to $500 a month will attract the type of pilot required. Suppose the pilot flies 150 hours a month instead of 68 and that he averages 100 miles an hour. Then, at the mileage rate in the day time of 5.5 cents current in 1928, the pilot would earn $825 a month without any base pay at all. This surely indicates that when it becomes possible to have all pilots fly more miles per month, the cost of piloting per mile is going to take a very decided drop.

If pilots will fly 150 hours a month for a total pay of $500 a month, then the cost per mile per pilot drops to 3 1/3 cents a mile. The total pilot cost per mile during the last six months of 1928 averaged 6.8 cents per mile.

In virtually every department of the air transport company there are potential possibilities for reducing costs that compare with the two examples given. The present costs are high because of the fact that only a few planes are flown every day. There may be one round trip made over the line or two or three. It has not yet become common practice to make ten, twenty or more round trips a day.

To insure regular operation a certain number of planes must be held in reserve ready to take the air in case anything happens to the plane that is scheduled for the flight. If only a very few round trips are made the planes that are flown are likely to remain on the ground a good many more hours daily than they are in the air, and not all these hours, by any means, are devoted to inspection and repairs on the plane and engines. With a relatively small number of planes the proportion of planes held in reserve to those that are flying has to be greater than is the case where more planes are operated.

For example, take an air line that is 250 miles long. Three flights are made each way every day. This gives a daily mileage of 1500 and a yearly mileage of 547,500. If everything went well, there were no accidents to planes, and repairing and inspecting could be done between flights, four planes would be ample for the operating of the line. However, to insure regular operation it is necessary to have one or more reserve planes at each end of the line and possibly at a stop that is made on the route. Somewhere between six and ten planes are considered essential for the operation of the line on a regular schedule. The mileage flown per plane, therefore, is necessarily cut down even if only the minimum number of planes absolutely essential are held in reserve. The actual plane mileage obtained probably is not more than 40,000 a year.

Now suppose that this same company starts flying 15 flights in each direction instead of three. The annual mileage jumps from 547,500 to 2,737,500. One plane leaves so soon after the other that failure to make one of the flights is not so serious as it is when only three flights are made in each direction daily. However, if enough planes are held in reserve to make certain that there will always be a spare plane, it is still possible to increase the mileage per plane per year to a very marked degree. With only three flights in each direction it was deemed necessary to have more reserve planes than those flying, and the flying planes had to stay on the ground a great many more hours than they flew. With 15 flights in each direction, no plane remains on the ground very long, the number of planes in the hangar is not so great as the number being flown, and it becomes more practicable to approach an average of 250,000 flying hours a year for each plane in service and in reserve.

There is also another advantage the air transportation company enjoys when its planes leave the airport at short intervals. The business done tends to increase at a more rapid rate than the mileage being flown. In the past a good many concerns that have found air express a decided advantage over slower express have also discovered that they can buy and operate their own planes and keep down the cost of transportation to the point they have been paying the transportation companies. In some cases where a number of planes can be operated and these planes are in continuous service the cost of private operation may prove to be less than the air express rates with the added advantage that shipments can be made quicker to the desired points as they go direct and do not have to wait for the departure of planes flying on schedule. With 15 scheduled planes leaving the local port every day, conditions would be changed to such a degree that many of these concerns would not feel that they could afford to operate their own planes except to reach points not reached by the regular air lines.

All figures thus far have been based on the supposition that the first cost of planes and engines and all salaries will remain at least as high as they are now. It is obvious that the cost of planes will come down. It is rumored that engines will sell for considerably lower prices than were current in 1929 before the end of 1930. The prices of planes are already tending downward. Airplane engineers have made the statement that planes now selling for $5,000 can, given sufficient quantities, be produced to sell for as low as $500 without lowering the quality of the plane or engine.

When air transportation companies increase the number of flights in each direction on their lines, they need more planes for two reasons. One is that the increased number of miles flown requires more planes. The other is that with schedules that make it possible for a person to secure full advantage of air travel, air express or air mail practically any hour of the day, there naturally will follow a very great increase in the use of air transportation. This use will be further stimulated by the fact that since costs per mile go down with increase in

the density of operation, lower rates can be offered to attract business. Accordingly where one plane has been able to carry the load it may require two or more during certain hours of the day to take care of it. The increased demand for planes which results makes it possible for the manufacturer to lower his cost per plane, and prices come down.

All this leads to the conclusion that if air lines could meet expenses at a 12 cents a mile fare in 1928, then the time should come when they can show a net profit on a three or four cents a mile passenger fare. Hourly flights in place of one to three flights a day will, in the case of many lines, make it possible to cut the cost of the plane mileage in half or even to a lower point, simply because the fixed charges, the overhead, is spread out over so many more miles.

Therefore, those companies that start direct competition with railroads by reducing fares to the level of railroad fares and operating on as frequent a schedule or even scheduling planes to leave at more frequent intervals than do the trains, are likely to show rather surprising results. It is quite possible that they will show a much more satisfactory net profit than do the more conservative air lines.

Getting air transportation charges down to the level of railroad charges, however, does not mean that the air transport companies are going to get all the business away from railroads. For a number of years the railroads have been doing exactly what the air transportation companies will have to do. The railroads have been working in the direction of more ton miles for each freight car and more passenger miles for each passenger car and they have been making marked progress.

More and more efficient locomotives are being built, roller bearings are being adopted for cars, and serious work is being done in the direction of crude oil engine propelled cars and locomotives. Railroad operating costs promise to show a greater and greater tendency downward in the coming years than they have in the past, due to greater efficiency in operation and more efficient equipment. The airplane probably will speed up work in this direction.

This Plane Carried a Load of Perfume From New York to Washington; One of the First Commercial Air Ventures in That Region.

—P & A Photo

Air Liner Passengers Arriving at Los Angeles From Mexico. Customs Officials Constitute the Reception Committee, As the Picture Shows.

Air Mail to 22 Foreign Countries

Air mail letters dispatched from the Pacific Coast to Buenos Aires are flown approximately 9,000 miles and are handled by five air mail lines during this flight, said to be the longest distance an air mail letter can be dispatched, reports Boeing System.

Air mail can now be flown over the United States airways network to connect with service to 22 foreign nations, representing airways 16,736 miles long. The airway distance between Miami and Buenos Aires is 5,784 miles, which added to that from the Pacific Coast to Miami, brings the total up to approximately 9,000 miles. The shortest foreign airway mileage is from Seattle to Victoria, 75 miles.

The most fluent talkers or most plausible reasoners are not always the justest thinkers.—*Hazlitt.*

"The intelligence of the man, it seems, must go up with the intelligence of the machine."—*Henry Ford.*

A fool always finds a greater fool to admire him.—*Boileau.*

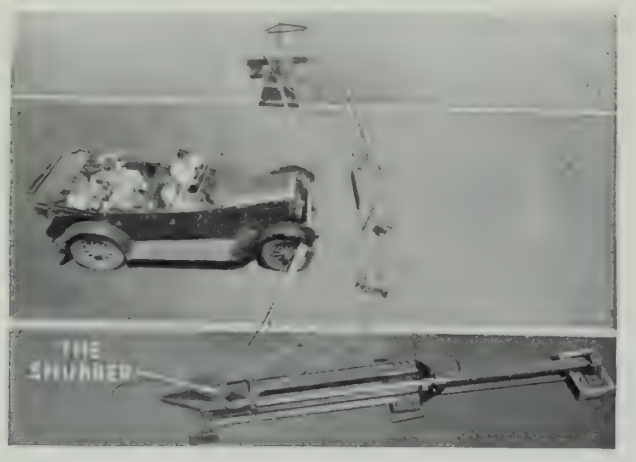
People love without reason, and without reason they hate.—*Reynard.*

The HIGHWAY GUARDIAN–

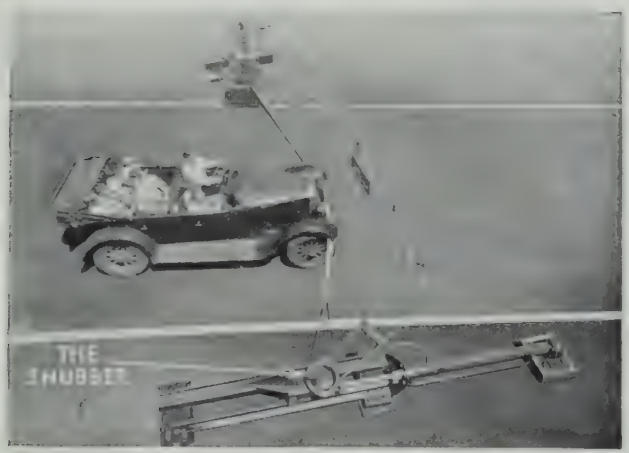
NOTHING less than force will prevent crossing accidents to-day. Statistics tell us 63% of highway smash-ups occur in the daytime, when highways are dry, where vision is unobstructed and with weather clear.

Human failures---carelessness, recklessness, poor vision, inability to act quickly in an emergency---are the chief causes of fatal crashes. Positive protection is the great need---protection that will save the motorist from himself. This THE HIGHWAY GUARDIAN has been developed to provide.

With HIGHWAY GUARDIAN protection, crossing accidents can be eliminated. Approaching trains automatically cause a barrier of steel to block the highway. Hit by an on-coming vehicle it sets up a yielding resistance that brings the machine to a standstill in a definite distance. Operator and passengers are saved, claims and car wreckage prevented and the expected safety provided to railroad passengers. The sudden stopping is no more severe than is experienced with 4-wheel brakes.



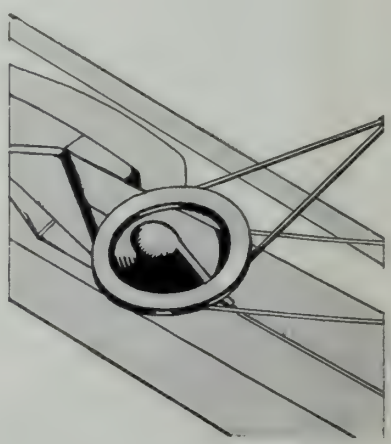
At the moment of contact with the barrier the wire rope gives an even bearing against the car. The snubber has not started to act.



Compare the position of the snubber in this picture with its position in the illustration above. Here the snubber has moved to take up the shock.

Prevent accidents....Eliminate the need for expensive crossings with this Automatic Safety Barrier

The effectiveness of THE HIGHWAY GUARDIAN in accident prevention has been thoroughly demonstrated. In a series of tests carried on for over two years, a 4,500 pound truck carrying two men has been crashed into a standard barrier 520 times at speeds varying from 5 to 35 miles per hour without injury to truck or riders. During the test period the barrier has been operated 175,000



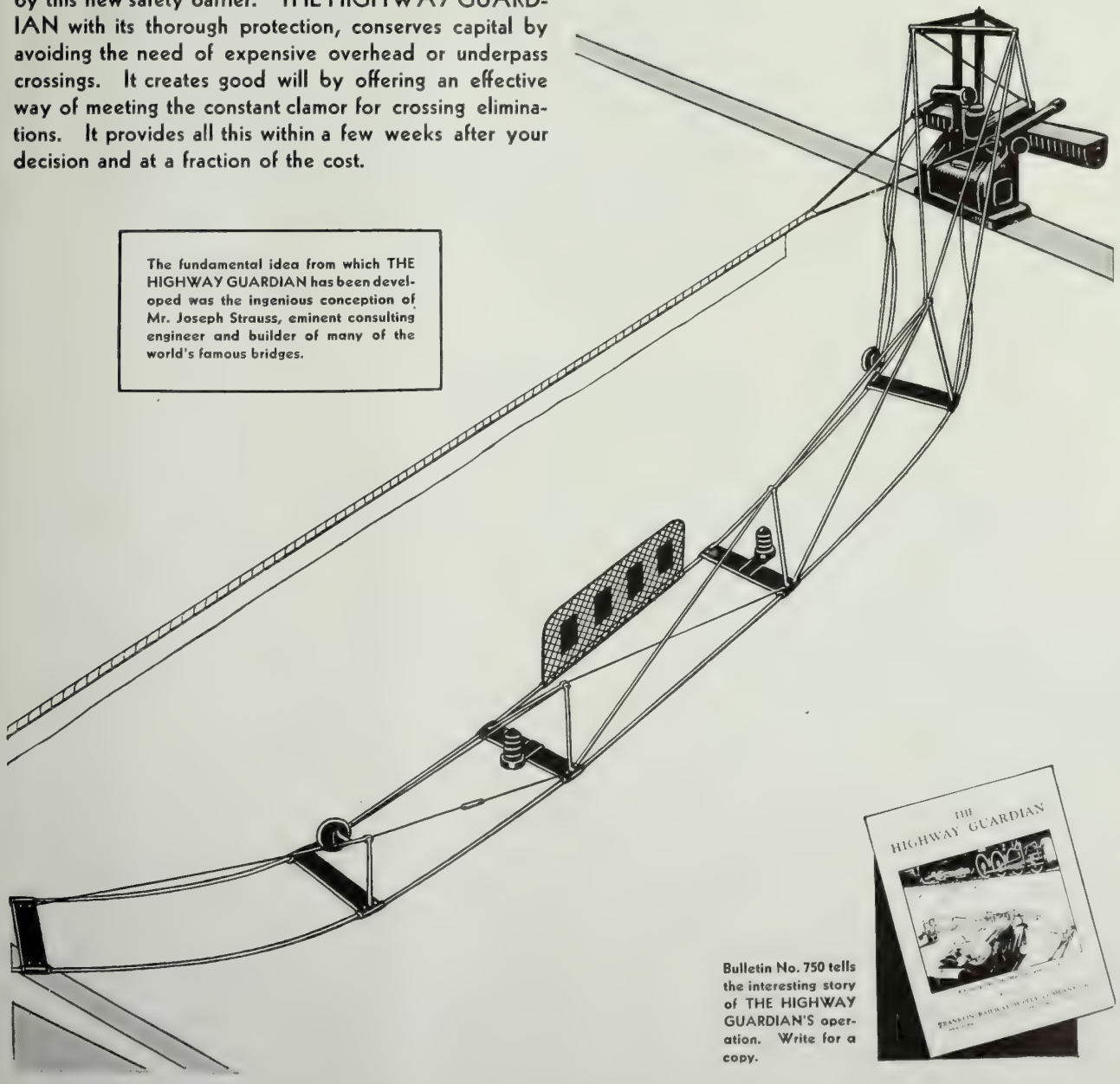
FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

—a crossing gate the motorist cannot crash!

times without a miss. This is the equivalent of 10 years service on a railroad having 50 trains every 24 hours.

And there are other important services made possible by this new safety barrier. THE HIGHWAY GUARDIAN with its thorough protection, conserves capital by avoiding the need of expensive overhead or underpass crossings. It creates good will by offering an effective way of meeting the constant clamor for crossing eliminations. It provides all this within a few weeks after your decision and at a fraction of the cost.

The fundamental idea from which THE HIGHWAY GUARDIAN has been developed was the ingenious conception of Mr. Joseph Strauss, eminent consulting engineer and builder of many of the world's famous bridges.



Bulletin No. 750 tells the interesting story of THE HIGHWAY GUARDIAN'S operation. Write for a copy.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

Little Stories About Big Men

Samuel M. Vauclain Speaking at the Dedication of the New Administration Building of the Baldwin Locomotive Works at Eddystone, Pa., in June, 1928.

ONE OF THE most popular and interesting lecturers heard every year in towns and cities in the Pacific Coast states, and doubtless in other parts of the country also, is a man who has given most of his mature years to telling men how to succeed in business. He has a perfectly wonderful fund of information about almost every kind of commercial and industrial enterprise in which he is not and never has been engaged. Notwithstanding this fact, however, we always have thought this lecturer's advice was fundamentally sound, and rather simple, too, consisting chiefly of the very common-sense rule about working hard, saving your money, living a decent life, violating no important laws, and giving everyone the square deal you might yourself expect.

But, after all, most of us attach the highest value to the advice of a man who knows just what he is talking about, who tells us how he did this or that in order to succeed, and doesn't overlook his failures and bonehead breaks as he goes along. We all know, doubtless, that the foundation of success in anything is certain to involve hard work. Every big man quoted in this department in the last three years put that word first in his list of requirements—work.

Unlike the lecturer referred to a moment ago, Samuel M. Vauclain, head of the Baldwin Locomotive Works, knows his job from real experience. Success, he says, is merely a matter of succeeding, which is not nearly so simple as the language may make it appear. Mr. Vauclain ought to know something about the subject, having risen from the thrilling post of enginehouse apprentice to master builder of locomotives with quite a margin of years remaining for quiet and satisfying contemplation. He ought to know.

No one handed Samuel Vauclain anything on a silver platter. He had to work hard, as we said in another story a couple of years ago about his boyhood, and although he has been at the top of the ladder for a long time he still works the same way while he is on the job which, naturally, isn't quite so endlessly as in the past.

Right now Mr. Vauclain likes to talk about selling Baldwin locomotives because, as head of that big organization, sales have a really personal appeal to him, another natural trait. Some authorities declare him to be the prize salesman of the whole outfit, but these chronicles would not record that fact without adding that if he really is Number One in his division he ought to be because he has had many years of educational opportunities not available to some pretty snappy salesmen. You have to remember, too, that when some railroad committee begins to act up in the presence of this Baldwin head he feels perfectly safe in making certain observations, agreements and other things denied to the average ambassador from Philadelphia's locomotive plant who may have to telephone or telegraph the house before committing himself. The boss always has an advantage over the force below him.

Still you have to hand it to Samuel Vauclain when it comes to figuring up the cost and delivery time of a dozen or so locomotives while a committee is waiting in the corner. In support of this belief one hears the story of a committee whose members wanted a prompt bid on a number of locomotives for which there seemed to be an emergency. It would take some little time, Mr. Vauclain told the impatient railroaders, to deliver his answer.

"How much?" the committee inquired.

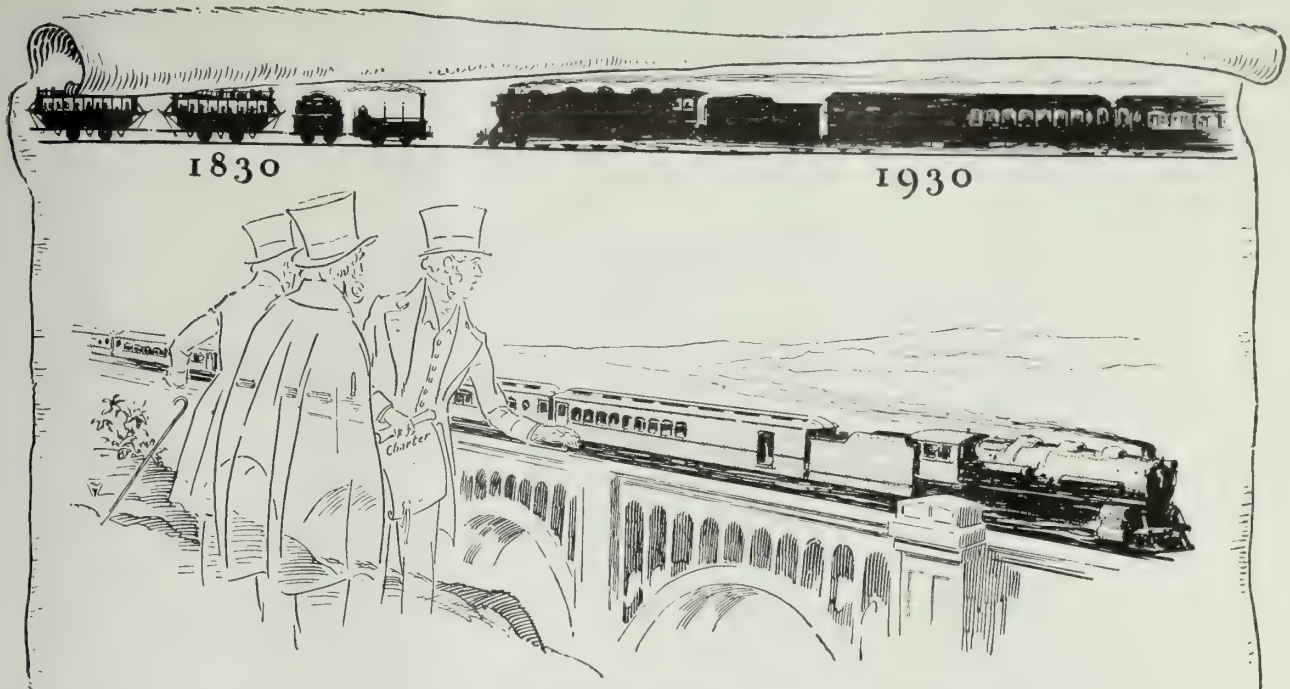
"Thirty minutes," Mr. Vauclain replied.

He has very definite ideas about this matter of selling, whether it be locomotives or safety razor blades, although he may never have sold any blades.

"It is better to sell an engine or two instead of a dozen or a hundred," he explained as he was striding the floor of his spacious office in the Administration Building one day not long ago.

"This is particularly true in reference to new buyers, because they soon will need other engines, and being convinced that yours is the right product will easily buy again.

"And really the big orders are not hard to get. Delivery and price and



One Hundred Years of Service

ON February 10, 1830, a little company of progressive people in Petersburg, Virginia, obtained from the General Assembly of Virginia a charter for the construction of a railroad from Petersburg "to some convenient point on the North Carolina line."

When completed it reached from Petersburg to Blakely, Va., one and a half miles below the falls of the Roanoke River, a total distance of 59 miles.

Not much of a railroad by modern standards! But an undertaking of some magnitude for those times; and one that, its advocates foresaw, would revolutionize industry and commerce.

They were empire builders, those pioneers of the Petersburg Railroad, who had unbounded faith in the future of the South and in the success of the new enterprise. But as great as was their faith they could hardly have envisaged the changes that were to come.

Built as a local enterprise to increase trade, the Petersburg Railroad became in a few years a link in the "great mail" route between North and South and, with more than one hundred other roads, was later welded into the Atlantic Coast Line Railroad Company.

Today what was formerly the Petersburg Railroad is an essential part of a system comprising 5153 miles of railroad in Southeast Virginia, the Eastern Carolinas, Georgia, Florida and Southeast Alabama.

Over the heavy steel rails that long ago replaced the strap-iron track of the Petersburg Railroad, there moves a vast and varied traffic.

From North to South—from South to North—the great trains thunder past. Luxurious mile-a-minute passenger trains, each costing as much as the entire original cost of the Petersburg Road. Swift freight trains, laden with valuable cargoes.

Every train essential to the commerce of the nation. Every train a tribute to the vision of the founders, and of the men who followed after.

The Atlantic Coast Line of today has been a century in the making. It looks to the future with the same confidence as did that President of the Petersburg Railroad who wrote: "of the final success of such a line, no one can doubt who is the least acquainted with the immense intercourse of the country and with the great value of time in conducting its business."

VIRGINIA-NORTH CAROLINA-SOUTH CAROLINA-GEORGIA-FLORIDA-ALABAMA
ATLANTIC COAST LINE

ATLANTIC COAST LINE

The Standard Railroad of the South

engineering are the questions involved and you have but few competitors. But when it comes to an engine or two, real salesmanship may be needed."

Mr. Vauclain then remembered. It was an incident typical of the Vauclain system of selling and worth remembering to retell.

"I believe in pleasing customers," he began with a smile. "That really is one of our best maxims. But sometimes a customer may need instruction. There was the case of a road which had bought ten locomotives from us. After a time we received a letter from the operating vice president in which he said that the engines were no good.

"Now I knew that the engines were excellent within themselves. It was an occasion to reach for your hat and go to see that customer. Before calling on him I dropped in at his enginehouse and looked over the engines. Only one of them had been properly handled; they were in bad shape.

"A locomotive is something like a horse with us. We get to love the things. And seeing those engines so badly treated was enough to make any locomotive man mad clear through.

"So I went in to see the vice president. He kept me waiting a long time and then received me with a glance intended to freeze. But I survived it and said to him:

" 'Look here, if you treated a horse the way you have treated my engines the society for the prevention of cruelty to animals would be after you. Now, it isn't fair to handle our engines like that, and write us that they are no good. It is your organization that isn't any good or maybe it's you. I don't know.'

"Well, sir, you should have seen his face. If his glance had been freezing in the beginning it was burning now. He repeated that his organization was all right, and the engines were bad. As for himself, he left me to draw my own conclusions. But I told him to get his coat and come down to the enginehouse. He had to go, under the circumstances. And one look showed him that the engines had been mishandled.

"We went back to the office much better friends, and I said to him:

" 'See here, you need some passenger engines to put your trains on schedule, and stop the public talk about how late they run. Shall I send you down a few?'

"He was surprised again, denied that his trains were late any oftener than those of many another road, and so on. But I told him that he wasn't working for other roads, and not doing his own justice if he had delayed schedules for the lack of a few locomotives.

"So we had as fine a row as you ever heard, and parted good friends. He really was a first rate executive, but must have grown careless; got into a rut. We have been friends ever since and his trains are run on time nowadays."

There is no doubt that Samuel M. Vauclain enjoys such selling contacts. His is the philosophy of a happy, fighting man, on the job he loves. He believes that a man's job should be his joy, and when it isn't that condition implies something wrong with the job or the man, usually the man, because a balky job can be turned into joy by the metaphysics of optimism.

"Almost anybody can accomplish almost anything if only he has the will to do it," was the way he phrased it. He commands 18,000 men every day, but he does it by understanding, and not by any mere right of authority. He has the contemplative air and a philosopher's creed.

"The hard thing in life is not to make the money needed for happiness, but to find the job you can do best," he continued. "I suppose it is a fact that some men never really hit upon their vocation. But, broadly speaking, the right job for every man is the thing that he must do next. I doubt whether many of us ever pick our jobs; we just happen upon them, or they happen upon us. Presently we get acquainted with each other and both decide that the other fellow will do pretty well. That is the way to know your work. Make it your friend. Invest it with a personality, and give it the chance that you would give a friend. Don't cheat or skimp it; be loyal and zealous, and your job will reward you with every joy of friendship."

P. & A. Photo

Lieut. John Phillip Sousa, Veteran Bandmaster, Directs His Saxophonist While An Illinois Central Crew at Chicago, Park Row Station, Enjoys the Music.

Samuel Vauclain belongs to the six o'clock school of success, his regular rising hour, and reaches his desk by seven. Sometimes he stays there until ten at night. He never has taken a vacation, and doesn't feel the need of one now. Hard work, he believes, is the sinew of achievement and a surety of health. Besides, it is happiness. Listening to him expound his creed of success achieved merely by doing the next job right, and always being ready to put forth a man's utmost effort, it is not hard to perceive that one of the happiest periods in his life began with the stern demands of the war. That is to say, the neces-

CONLEY

Solid Manganese
Self Guarded

SPRING FROGS

Are giving excellent service under severe traffic conditions on Railroads using them.

Four years of successful service in main line by CONLEY TYPE SPRING FROGS have demonstrated their merit for safe and economical service.

SHOWING SPRING FROG IN SERVICE

CONLEY FROG & SWITCH CO.

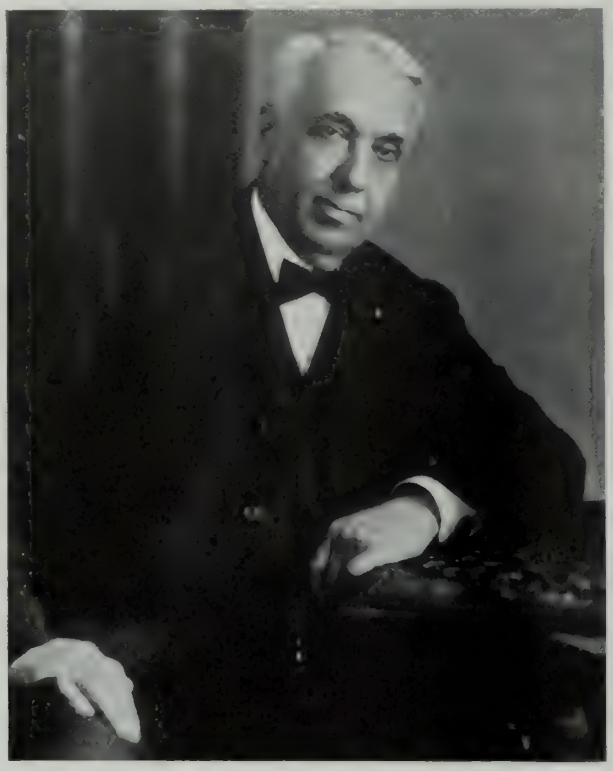
Memphis, Tenn.

sity for large and intensive production was a challenge which struck sparks from his imagination.

During the whole period of the conflict the Baldwin plants produced seven locomotives every 24 hours, a record unapproached, it is said, by any other organization in the world. The Baldwin forces also put up a plant that turned out 15,000 shells and 6,000 rifles every working day of 24 hours. That plant produced about half of all the rifles that American troops used overseas. And the locomotives did a lion's part in hauling the uncounted tons of supplies that contributed to victory. This was the sort of work that this giant enjoyed. Up at six and going until the far hours, calm, self-possessed, seemingly tireless, with the energy of a man who works at high pressure but understands the regulation of his resources. His is the air of a man who merely is confirming what everybody knows, or something which everybody surely should have learned. The way to success is through the next job, and the way is not hard. His earliest lessons were learned in the school of hard work. "I went to school more than most boys of my day and wanted to attend college. Also I wanted to be a mechanic," he said. "The entrance age was 17. A year earlier I entered the enginehouse as a helper in order that no mischance might prevent my admission. That was duly granted, and I served five years apprenticeship. During the last year or two of this time I was a kind of under-foreman, drawing the pay of an apprentice. It was my intention to enter college after completing the apprentice term. But no sooner had I become a full-fledged workman than they made me a foreman. Should I leave the road for three or four years of study? It was a hard problem, and I considered it until they moved me up another peg and my college course went glimmering."

With such a beginning, Mr. Vauclain studied mechanical drawing at night, and in the course of things came to the Baldwin Locomotive Works on an inspection job. He stayed there a year supervising the building of engines. This was a new and bigger world. Here indeed, he decided, was the theater of his efforts, and industrial forge of Vulcan, where big hammers beat upon colossal masses of steel, where fires blazed, men sweated and achieved.

The young man of today, the young woman, business as a whole, the nation itself, stand at the dawn of the greatest, happiest epoch of history, Mr. Vauclain believes. So many improvements have been made in every aspect of life that he is convinced existing ills will be remedied wherever they exist, opening the way to a new and better day.



Samuel M. Vauclain

"Look backward for comfort when you observe difficulties rising in the future," he said. "Read and ponder the methods of great men in the past, consider the difficulties that the nation has already overcome, and the future will always be bright. We may enjoy blessings only when we have known adversity."

The World Does Move

In the present era of scientific, mechanical, industrial advancement few men, except perhaps a Voliva, the Zionist who still believes the world is flat, have the courage to doubt that almost anything is possible. Less than at any period in the world's history do men ridicule the theories of inventive minds as they did a hundred years ago, when Stephenson produced his famous little Rocket. Indeed there is just a chance that in the presence of such progress we may become a trifle over-certain of ourselves. We smile over the styles of 30 years ago, forgetting that a coming generation will laugh at us.

Vincent Massey, the Canadian diplomat, speaking to the American Railway Engineers' Association, last spring, told about some of George Stephenson's experiences with the English public when his locomotive astounded the world.

"When Stephenson won that contest," said Mr. Massey, "the Liverpool & Manchester Railway directors made a most important decision. They decided that their passenger and freight trains had, perhaps, better be drawn by locomotives and not by horses. So after years of experimentation and disappointment, the steam railway, just about a hundred years ago, definitely began its career of progress. The iron horse began to feel his oats.

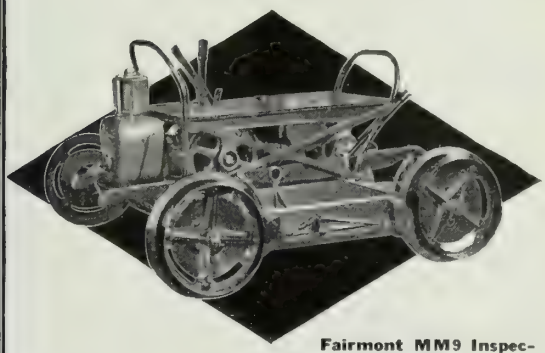
"But those dangerous revolutionaries who believed in steam railways had a bad time with parliament and with a skeptical public. What would happen to fox hunting if railways were to plow through fox covers? Impassioned speeches were made ostensibly in defense of widows' cabbage patches and strawberry beds. What, too, would become of coachmen and coachmakers? Would it not be a very awkward matter if a cow were to stray on the railway line? You remember the immortal answer which Stephenson made to that observation. He said, in his north country accent, 'Aye, verra awkward for the cow.'

"Then when railroads came to be projected almost at the same time on this side of the ocean, it was pointed out that the noise of the new iron monsters would prevent hens from laying eggs and cows from giving milk. They were very much more sensitive about noise than we are now. I think sometimes we might imitate that frailty of our ancestors, with some degree of advantage.

"This attitude toward noise gave rise to one most unfortunate incident. You will recall the story of one of your early engines named the 'Best Friend.' Its attendant was so annoyed by the sound of escaping steam that he reduced it to effective

DEPENDABILITY

"On Time"—that phrase was born in the faithful, never-failing performance of the Railroads, which maintain—on hundreds of thousand miles of track—schedules computed in minutes, even in seconds!



Fairmont MM9 Inspection Car
Water Cooled for 1 or 2 men. Other models include: C1—Air Cooled for 1 or 2 men, and M19 Spring Mounted for 1 to 4 men

To protect the reputation for dependability that it enjoys, the Railroad World must be certain of the performance of every factor—human and material—that enters into its service. In no department is this so clearly seen as in maintenance and right of way, where Fairmont equipment is fast becoming the standard.

Dependability, when applied to Fairmont Motor Cars, has a double meaning. It means continuous, never-failing service and also *lowest over-all cost* service. This is not an idle claim, but a matter on record in thousands of railroad offices, and in the fact that *more than half the motor cars now in service are Fairmont products.*

FAIRMONT RAILWAY MOTORS, INC.
FAIRMONT, MINNESOTA, U. S. A.

General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO
District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans
FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles, and safety appliances

Fairmont Mudge
Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT

silence by the simple expedient of sitting on the safety valve. The only difficulty was that the 'Best Friend' blew up. I suppose the moral of the story is that even our best friends resent being made to keep quiet.

"Then came the objection of the canals and toll roads. In all the century of its history, the railway has never lacked an adequate supply of opponents. Strangely enough, it is now faced again with its old competitor, the highway, through its new ally, the motor car. Perhaps the airplane soon will add its quota of problems to railway transportation. Someone prophesied just the other day that all your first class passengers were soon going to travel by air. I may tell you that in Northern Canada we have already used heavy airplanes for the transportation of both workmen and building materials. But this, after all, was for use in railway construction, so that the airplane was not a rival, but a handmaiden.

"Well, it is a curious thing to run over the early objections to the railway. One was a letter written to the press by an infuriated Englishman who said it was a notorious fact that the brains of business men were so addled by the swiftness of the trains that they forgot what they had made the journey for and had to write home to find out. Well, that may explain difficulties which we all have had in recent times. But even when the railway became an accepted fact, it still had its enemies. It is extraordinary to turn over that amazing letter written by John Ruskin only 40 years ago to the *Times*, that repository of objections of all Englishmen, in which he said:

My Dear Sir:

I do not write now further concerning railways here or elsewhere. They are to me the loathsomest form of deviltry now extant—destructive of all wise social habits or possible natural beauty, carriages of damned souls on the ridges of their own graves.

"Well, gentlemen, the objections of our ancestors have been overcome. At the end of this century, since George Stephenson's Rocket won the prize, we have seen a steady growth of efficiency and comfort for which we, the traveling public, are not perhaps as grateful as we should be until we sit down and think about it.

"You may remember Kipling's poem in which he asks whether romance is dead. Is this god, Romance, gone from the earth? Has modern machinery killed him? Can he exist on a railway? Surely not. Then the verses run:

Romance! the season tickets mourne,
He never ran to catch his train,
But passed with coach and guard and horn
And left the local—late again!
Confound Romance!—And all unseen
Romance brought up the nine-fifteen.

Vincent Massey, Canadian Minister to the United States.

"To us in North America railways are the embodiment, the very shape of romance itself, and the work of developing, of constructing and managing and operating the great railways is a superb work, not only of concrete skill but of the imagination. A railway, it always seems to me, is a poem in practical form. I am not thinking of the lyrical imagination which enters into the nomenclature of Pullman cars, although I should like very much to meet the man who names them. What I mean is, it is a mistake to think of the poet only as a man of words. He is a man of action as well.

"There is something of the poet in every great administrator, every great engineer, every great leader of finance and industry. Perhaps the president of a bank, for instance, would not consider it an unmixed compliment if he were told he was a poet at heart. He probably would furiously deny the charge. I confess that I have met bankers when they did not exhibit poetical feeling in any large form. But what I mean is obvious enough, gentlemen. There is no great achievement of any kind that has not got imagination and a soul behind it."

Low Air Rates Bring Business

Proof that high fare has been the greatest deterent to a general acceptance of air travel is seen in the immediate remarkable increase in air passenger traffic over the lines of the Aviation Corporation System following the fare reduction of Jan. 22. Passenger rates on the corporation's system including the lines of Universal Aviation Corporation, Colonial Air Transport, Southern Air Transport and Embry-Riddle were reduced to a level comparative with those for rail and Pullman travel.

The response of the traveling public was immediate and so large that several of the lines have been forced to put on larger airplanes or run two and three planes where only one was flown before the new fares went into effect.

During the first three days the lowered rates were in effect, according to James F. Hamilton, operating vice president of the corporation, passenger traffic increased more than 400 per cent over the system, compared with an average previous three-day period at the higher rates.

"We expected a large increase in air travel to follow the rate reduction," said Mr. Hamilton, "but the immediate response and the carrying of five times as many passengers in the first three days the new rate was in effect as we did in a similar previous period, was even better than we had expected.

"Several of our lines have had to replace single engined planes with larger tri-motored equipment or run in two or three sections in order to take care of the volume of traffic.

"The experience simply shows that travelers will ride the air lines if fares are kept on a level near that of other forms of transportation, and I believe the traffic will continue to increase.

"With the fares at the present level, air travel is by far the cheapest form of transportation, if time spent in travel has any value at all."

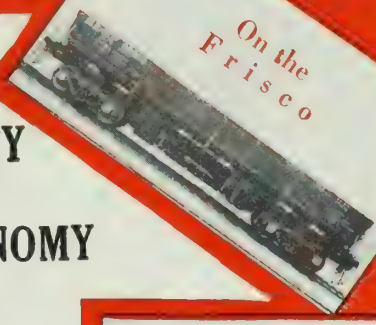
SAVE TIME

SAVE LABOR

On the Southern Pacific

On the Boston & Maine

On the Frisco



FOR
SERVICEABILITY
AND
INVESTMENT ECONOMY

On the Great Northern

On the Santa Fe

On the E. J. & E.

On the A. C. & Y.

MAGOR Air Dump Cars are known throughout the world for their ability to stand the hard knocks and terrific punishment of loading and unloading. They are big and rugged and yet the smoothest in point of operation.

The extra built-in strength gives the owners every advantage of sustained operation, added years of dependable service, minimum upkeep cost and the highest return on their investment.

Magor Air Dump Cars are dependable and economical for the following very good reasons:

Strong Underframe and Body
Stability on Track
Violent Shocks Eliminated
Cannot Dump Prematurely
Selective Dumping
Free Floating Door
Low Loading Height
Dump Clear of Track Ballast
Meet A. R. A. and I. C. C. requirements.

. Here is a dump car that merits investigation. Ask for full details.

Magor Car Corporation
50 Church St., New York

On the New York Central

On the C. P. R.

On the Cedar Rapids Ry.

On the M. & E.

AUTOMATIC SIDE DUMP

MAGOR CARS

This Is How It Operates

THE HIGHWAY guardian, referred to somewhat briefly in the January issue of *Transportation*, has created such lively interest that a more technical description has been requested.

The device is covered by patents owned or controlled by the Franklin Railway Supply Co. Inc. of New York. As shown here the barrier arm consists of a light but strong skeleton steel work formed in the shape of a crescent or bow securely fixed to a pivoting base mounted on a pedestal. A steel cable is stretched tautly to form a chord of the crescent so as to make a resilient member for contact with oncoming vehicles. The whole barrier arm can pivot on the pedestal both vertically and horizontally, and the whole structure is balanced so that when lowering to closed position a force of only five pounds is sufficient to arrest the motion of the barrier. The reason for providing the horizontal movement is that should a vehicle strike barrier before it is in locked position the barrier will be pushed harmlessly to one side, allowing the vehicle to proceed. Even when barrier is in locked position it is still free to swing away from railroad tracks, thereby permitting vehicles to escape should they be caught between barriers. All movements of barrier are so controlled that violent motion at any time is eliminated; consequently, no serious damage can occur to vehicles, operators or passengers. The pedestal consists of a cast steel housing suitably and securely fixed to the foundation and has provided housings to receive the ball trunion bearings on which the barrier arm pivots for vertical movement. Inside the pedestal is arranged all the operating and control mechanism which consists of: Motor driven hydraulic pump; hydraulic cylinder and piston for raising barrier arm; magnet and pilot valve for controlling motor and hydraulic cylinder; hydraulic reservoir; relief by-pass valve to control pressure in hydraulic cylinder, suitable switches for lights, sirens, etc.

The operating mechanism will be understood by referring to figures used here and shown in the drawing.

Assuming that the operation is automatic, the barrier will lower in response to a train entering or approaching the danger zone.

The action of a train on a suitable track circuit causes magnet switch (2) to be deprived of its holding power, which permits magnet arm (3) to drop away from coil (4), moving pilot valve (5) away from seat (6), closing oil pressure line (17) from oil pump and allowing oil pressure in chamber (7) to reduce due to the escape of oil through pipe (8) to main reservoir (9). This in turn allows the pressure on the underside of valve (10) to move this valve to the open position releasing oil pressure in operating cylinder and returning oil to reservoir (9) through pipe (11).

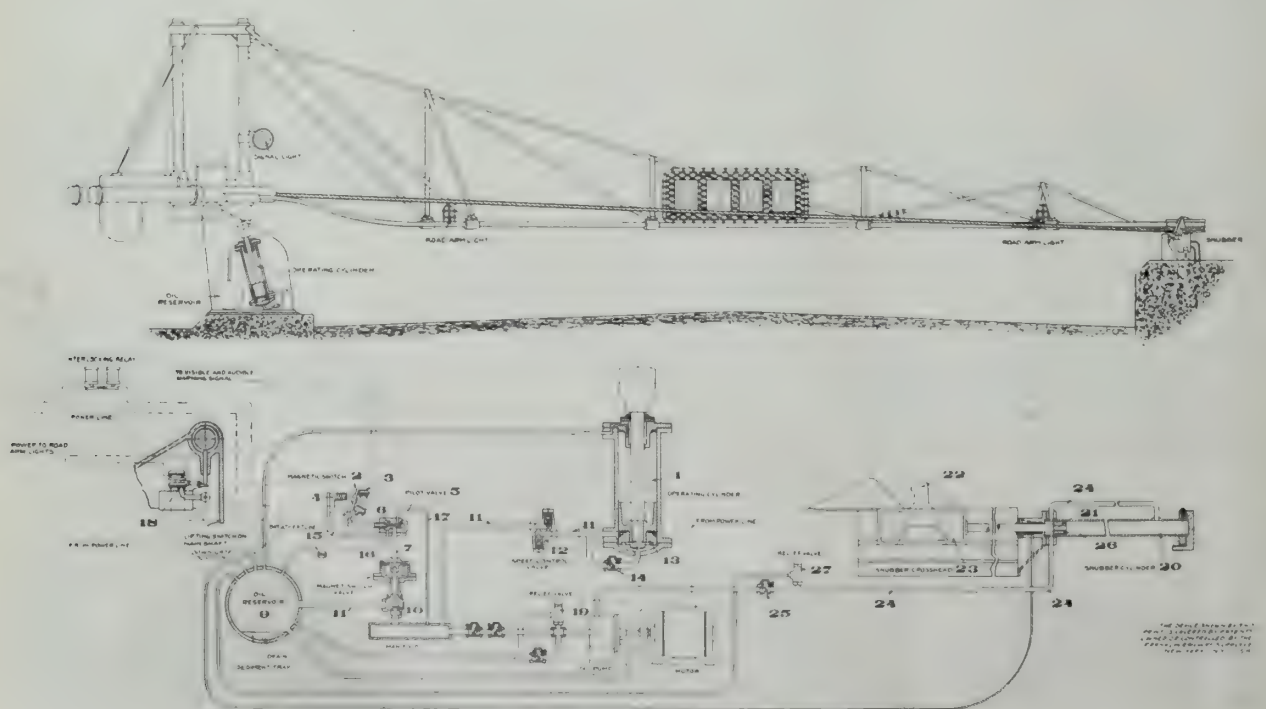
The speed of lowering the barrier is a function of the rate of escape of oil in operating cylinder (1) back to reservoir (9). This rate of escape is governed by the speed control valve (12) which can be adjusted to necessary closing speed required.

The escape of oil from operating cylinder (1) is through pipe (11), but toward end of stroke a portion of oil is trapped between piston (13) and check valve (14) so as to provide a cushioning effect during the final closing.

After train has passed and the danger no longer exists, the magnet switch (2) is re-energized and magnet arm (3) is pulled against coils which also closes pilot valve (5), simultaneously the motor switch (15) is closed so that power is applied to motor driven oil pump which immediately operates to build up pressure in operating cylinder (1) and on top of diaphragm (16), through pipes (17) and (7) and holding valve (10) on its seat. Consequently, piston (13) will be forced upward carrying the barrier arm with it.

In order that motor oil pump will not run continuously a cam operated switch (18) is wired in series with the motor switch (15), which when the barrier has reached its full open position, breaks the circuit and stops motor, where it will remain until the approach of another train sets the whole cycle in action again.

Relief valve (19) is provided to prevent overloading of pump should barrier be restricted from opening



CONFIDENCE

It has cost much effort and considerable money to bring the ROBINSON CONNECTOR to its present state of approved efficiency. We could have earlier and more conveniently offered a Connector which would have held air and which would have coupled "just as well", no doubt, but it would not have been so highly refined, it would not have been so inexpensive in first cost—so thoroughly substantial.

Then, too, the maintenance expense would have been a real item.

In the slow and expensive process of developing the ROBINSON CONNECTOR we have aimed to deserve your confidence through the production of an altogether efficient equipment.

ROBINSON AUTOMATIC CONNECTOR

415 Lexington Avenue
New York

"Building Automatic Connectors is our exclusive business"

due to being caught under fender or bumper of vehicles or any other obstruction.

Any combination of signals, audible or visible, may be arranged by suitable switches and connections, responsive to magnet arm (3) or cam switch (18).

Two red lights and one stop sign are furnished as part of the equipment.

The action of the snubber is as follows:—

The pump when in operation to raise barrier builds up pressure in snubber cylinder (20), thereby returning piston (21) to normal position and holding it there for further use, when barrier is lowered. When vehicle strikes barrier the cable pulls on engaging post (22), attempting to pull crosshead (23) toward track. Due to angular pull of cables, friction is set up between crosshead and guides to form part of the resisting force. Any movement of crosshead in turn moves piston (21), which endeavors to build up oil pressure in back end of snubber cylinder, and force oil out of cylinder (20), (due to displacement of rod) through pipe (24).

The oil cannot freely escape back to reservoir because it is prevented by check valve (25). The oil displaced by piston rod is discharged through pipe (24) and relief valve (27) which opens at a pre-determined pressure and allows this oil to escape to reservoir. The oil in back end of snubber cylinder cannot escape so as to reduce the high pressure except through the small holes (26) to opposite end of cylinder. Movement of piston (21) slowing down reduces pressure in back end of cylinder, so that when (21) piston comes to rest the pressure in both ends of cylinder is equalized. This enables the snubber resistance to be reduced to zero at the same instant the vehicle comes to a full stop. After snubber has performed its duty it remains extended until barrier is ready to raise, when, as before explained, the pump builds up pressure in snubber, forcing it back to normal position.

Some Fuel Discoveries

Different persons, even automotive engineers, rarely agree as to the relative merits of a given set of gasolines. In connection with a program for conservation of petroleum resources, the bureau of standards at Washington recently studied this question. Specifically, this work was confined to a study of the relative merits of a series of common fuels for giving acceleration.

The laboratories of four of this country's automotive "giants" were opened to government engineers for this work. Nine engines, representing the most modern automotive design, were used. Careful tests were made of the behavior of the same set of fuels in each of these engines. The painstaking nature of the work may be realized from the fact that over 100,000 computations had to be made in working up the results.

The results show that each engine "rated" the fuels in exactly the same order at all temperature conditions used. Differences in design, however, caused the actual value of the improvement of one fuel over another to differ among the engines tested. For an extreme example, under summer operating conditions, one engine found a certain fuel to be 6 per cent better than the reference fuel; another engine rated it as being 25 per cent better. It appears, therefore, that while it is possible to produce one fuel which will be best for all engines, the engine design may also be modified in some cases to take fullest advantage of this improvement.

Rock Island's New Car Repair Shops at Blue Island, Ill., Covered With Channel Slabs.

The Splitter.

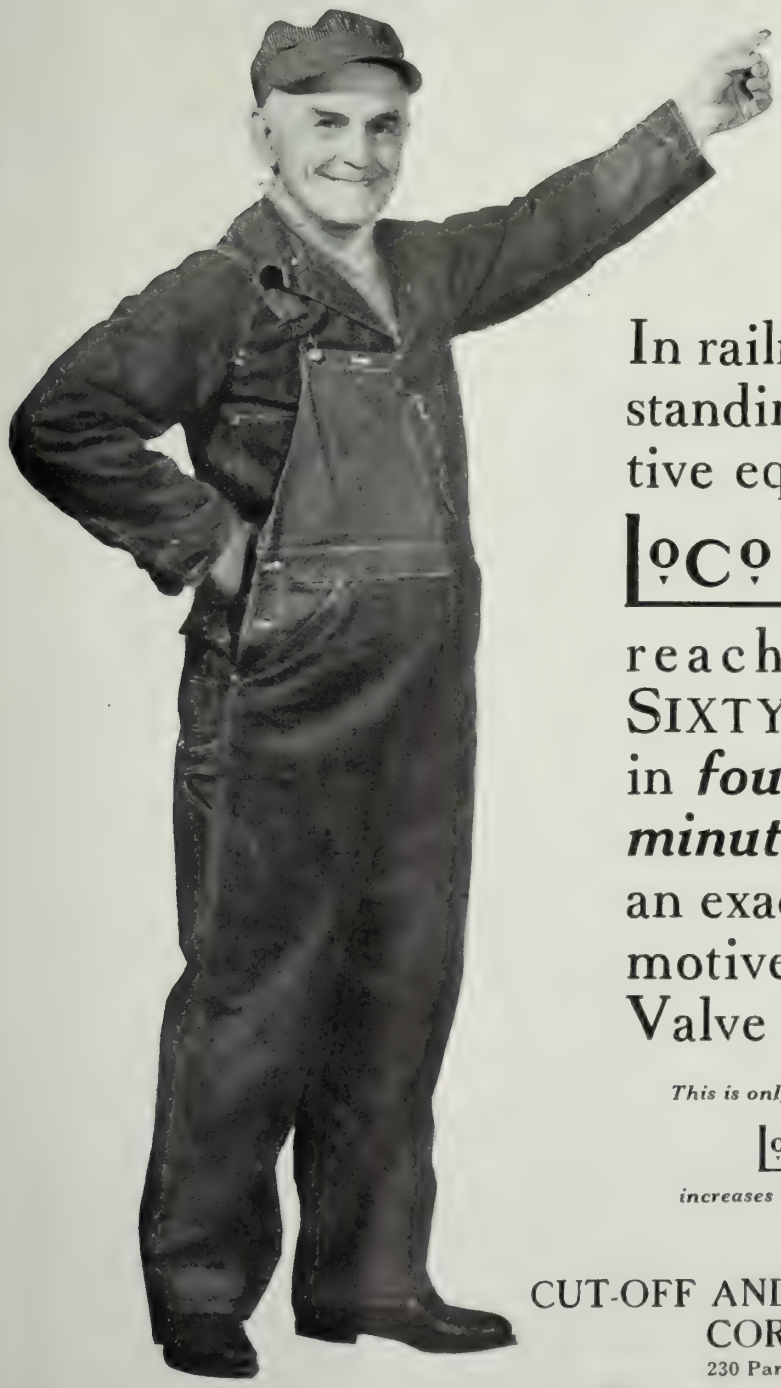
It's Called a Splitter

The peculiar gadget on top of the engine stack, just north of this item, is called a "splitter," used to deflect steam and gases to the right and left in snow sheds.

The fire risk in the snow sheds on the Southern Pacific's transcontinental line over the summit of the Sierras with the original type of wood burning locomotives, was great. This has been practically eliminated with the present type of oil-burners. The exhaust due to a use of full steam pressure loosened the boards of the sheds, and a continuous rattling of these boards accompanied the noise of exhaust gases during the passage of a locomotive through an upgrade part of the sheds. This is now eliminated by placing a "V"-shaped removable casting over the top passing through the snow sheds and all locomotives of fire trains. This is known as a "splitter" for deflecting the exhaust gases to the right and left where escape is allowed by omission of the top boards on the sides of the sheds. This deflection of the exhaust gases prevents any possibility of sparks being driven into the roof of the shed with a probable fire resulting.

Cairo, Egypt, has 58 miles of electric street railway lines on which are operated 395 coaches and 298 trailers. There are no electric rapid transit lines, electrified steam railroads, trackless trolleys, or buses operated by the street railway.

Acceleration!



In railroad tests, from a standing start a locomotive equipped with the

LOCO VALVE PILOT

reached a speed of SIXTY MILES per hour in ***four and one half minutes*** less time than an exactly similar locomotive, without the Valve Pilot.

This is only one of many ways in which the

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increases operating efficiency and reduces operating costs.

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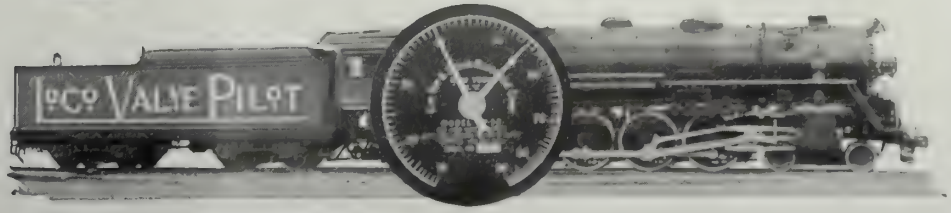


The News of the Month

What's Been Going on in Transportation, Railroads, Automotive, Supply, Aviation

IMPORTANT changes in the officer personnel of the Transcontinental Air Transport and Maddux Lines, which recently suffered a serious accident on its Los Angeles-Agua Caliente route, when 16 persons were killed, have been announced. The action followed a meeting of the officers and directors at which the accident and the new tariff policy which, through a new schedule of low fares, places the line in direct competition with railroads, were discussed.

C. M. Keys, director and promoter of some of the country's largest aviation projects, retired as active head of the company and is to be succeeded as president by J. L. Maddux of Los Angeles. Mr. Keys will continue as chairman of the board, while the chairmanship of the executive committee passes to a railroad man, an appointment considered significant in view of the fact of the air line's plan to operate on passenger tariffs comparable to that charged on railroads. Daniel M. Sheaffer, vice president in charge of traffic of the Pennsylvania Railroad, is the new chairman of the executive committee of the line.

Colonel Charles A. Lindbergh, who has been responsible for the selection of aircraft equipment of the air-rail system, mapping of the route and other technical work, was reappointed chairman of the technical committee. Colonel Paul Henderson was re-elected executive vice president, and W. J. Barry was re-elected secretary and treasurer.

President Maddux has announced that the national executive offices of the T.A.T.-Maddux lines are to be moved from St. Louis to Los Angeles.

Western Pacific Plans

Upon his return from the East, H. M. Adams, president of the Western Pacific Railroad, said in a formal statement:

"Proposed control of the Denver & Salt Lake Railroad by the Denver & Rio Grande Western, with which the Western Pacific makes direct connection at Salt Lake City, is a development in a program long under consideration. The consummation of this project is highly important to the Western Pacific and the territory which it serves in California, Nevada and Utah.

"By the construction of the 41-mile 'Dotsero cut-off' between the Denver & Rio Grande Western and the Moffat Road, a new transcontinental route will be opened between San Francisco, Oakland, San Francisco Bay territory and Central California points, and the East via Salt Lake and Denver. This route will add much to the ability of the Western Pacific and the Denver & Rio Grande Western and their connections, to provide improved service, passenger and freight, to, from and via Chicago and St. Louis, giving them two important routes to the East, the other being via Pueblo to, from and through St. Louis.

"It may be assumed that if the Interstate Commerce Commission approves Denver & Rio Grande Western control of the Denver & Salt Lake Railroad, immediate steps will be taken to construct the Dotsero cut-off, which it is hoped can be accomplished during this summer and fall. Construction of the Dotsero cut-off will shorten the Denver & Rio Grande Western route between Salt Lake City and Denver 173 miles or 25 per cent, and give the Denver & Rio Grande Western via the Moffat Tunnel the shortest route between Salt Lake City and Denver."

Big Year for United Engineers

United Engineers & Constructors, Inc., comprising the U. G. I. Contracting Co., Public Service Production Company, Dwight P. Robinson & Co., Inc., and Day & Zimmermann Engineering & Construction Co., reports $81,600,000 of engineering and construction work completed during 1929, an increase of 19 per cent over the operations of 1928, according to the annual report of Dwight P. Robinson, president. The value of contracts on the books as of December 31, 1929, was $130,500,000 compared to $129,700,000 the previous year.

Railway Construction

Tracks & Yards

CALIFORNIA. — The Sacramento Northern has let a contract to the Utah Construction Co., San Francisco, for a line between Vacaville Junction and Creed, 7.5 miles, to cost about $400,000.

CANADA.—The Canadian National has let a contract to the Rayner Construction Co., Toronto, for a connection about two miles long with the grain elevator of the Canada Steamship Co. at Kingston, Ont. The cost will be about $100,000.

FLORIDA.—The Atlantic Coast Line has been authorized to construct a line from Medulla, southeast to Ridgewood, seven miles. The cost will be about $125,000.

KENTUCKY.—The Chesapeake & Ohio has let a contract to Langhorne & Langhorne, Huntington, W. Va., for an extension of about 28 miles, from Millard, Ky., east to the Kentucky-Virginia state line, to cost about $4,804,000.

TEXAS.—The Gulf & West Texas has been authorized to construct a line from Fredericksburg to Brady, 69 miles, and from Eden to San Angelo, 44 miles, and to operate under trackage rights over the Colorado & Southern between Brady and Eden, 32 miles, or build its own line between these points. The cost is estimated at $5,852,665.

The construction of a railway to be called the Sabine Basin, from Beaumont to Port Arthur, about 20 miles, has been approved by the attorney general of the state. The company has been incorporated for one-quarter of a million dollars.

WASHINGTON.—The Northern Pacific announces that construction work on the $6,400,000 railroad line from Moclips, Wash., to the Hoh River west of the Olympics in the Olympic Pen-

The clear air that J-M Smoke Jacks provide, greatly improves working conditions in the Chase Roundhouse of the Chicago and Northwestern Railroad located at Milwaukee, Wisconsin.

Handle heavy power in the roundhouse with light weight J-M Smoke Jacks*

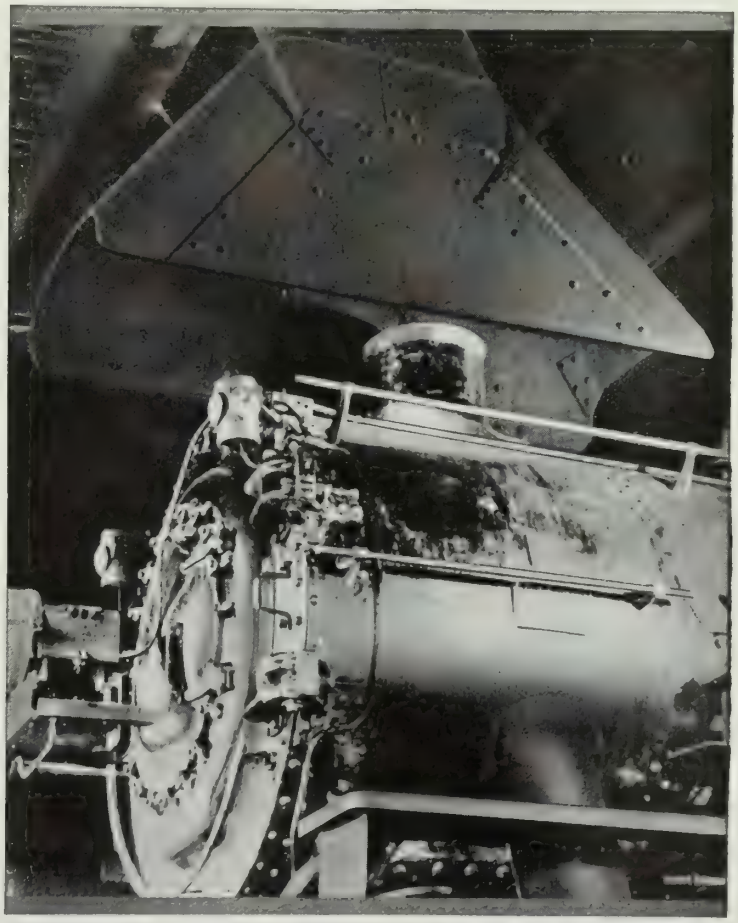
ON roundhouses with timber roof decks —old or new—light weight smoke jacks are an asset where larger jacks must be installed to handle smoke disposal for locomotives of larger grate areas and increased tractive force. Johns-Manville has developed a series of light weight Smoke Jacks, designed and constructed to meet practically every need of present day roundhouse design.

Johns-Manville Smoke Jacks provide the most economical and efficient construction obtainable. They are made of Transite, the most durable material known for this service. The natural resistance of Transite to the elements and smoke fumes eliminates maintenance costs. Periodic applications of paint or protective coatings are never needed. There are J-M Smoke Jacks that have been in service for over 20 years that are still giving first class service without any maintenance. The simplicity of design of all J-M Smoke Jacks make assembly and erection simple and easy.

J-M Ventilated Smoke Jacks completely remove smoke fumes and gases from the roundhouse, not only when the locomotive is spotted directly under the Jack, but while it is entering or leaving the roundhouse.

Mail the coupon for our brochure about J-M Smoke Jacks. In this booklet you will find Smoke Jacks that are scientifically constructed to meet variations in roundhouse design and competent to handle every size of motive power. The information and actual diagrams shown in this brochure will prove valuable to you.

*All J-M Smoke Jacks are patented.



The J-M Smoke Jack above this engine is made of Transite, an imperishable material which combines great strength and durability with light weight.

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SJ-82-2

insula, will be started about April 1, with P. E. Thian of St. Paul, consulting engineer, in charge. This new line, which will tap great timber areas, is a joint Northern Pacific-Union Pacific project. It will be 60 miles long.

WEST VIRGINIA.—The Norfolk & Western has been authorized to extend the Jacob's Fork branch and the Dry Fork branch, from a point near Newhall, northeast, eight miles. The cost is estimated at $1,180,000.

Buildings & Structures

CANADA.—Toronto. The Canadian Pacific has let a contract to Anglin & Norcross to construct a 21-story addition to the Royal York Hotel. The addition will contain 160 rooms and cost about $839,500.

Vancouver, B. C. The Canadian National has let a contract to the Northern Construction Co. and J. W. Stewart, for timber pier sheds to cost about $900,000.

FLORIDA.—Pensacola. The W. Horace Williams Co., New Orleans, has a contract from the Louisville & Nashville for a brick and concrete warehouse to cost about $250,000.

KANSAS.—Hays. The Union Pacific is planning to construct a freight station, loading docks and additional sidings here to cost about $150,000.

MAINE.—The Portland Terminal Co., a subsidiary of the Maine Central, has let a contract to the Mead-Morrison Mfg. Co. for two coal handling towers at Turners Island, South Portland. A contract has also been let to the Merritt, Chapman & Scott Corpn., New York, for 50 per cent of the work in a general program of wharf and warehouse construction at Portland and South Portland. The complete program of development involves an expenditure of about $2,000,000.

MICHIGAN.—The Pere Marquette is planning to spend $6,110,000 for various construction projects this year. The budget includes the following: grade separation structures at Michigan and Miller avenues, and a ferry slip, at Detroit; a freight station, lift bridge over the Black River, and improvements to the enginehouse at Port Huron; a passenger station at Bay View; a ferry slip, berthing dock and trackage facilities with new 80-foot aprons at the north and south ferry slips, and a brick passenger station at Ludington.

The Chicago & North Western has asked permission to build an extension to its Gogebic line, in Gogebic county, about six miles.

NEW JERSEY.—Jersey City. The Pennsylvania has let a contract to the Deakman-Wells Co., Jersey City, for a hog storage building to cost about $136,000, and for additions and alterations to the hog abattoir, probable cost, $127,000.

OHIO.—Dayton. M. E. White Co., Chicago, has a contract from the Dayton & Union to construct a track elevation at this point to cost about $435,000.

TEXAS.—Dallas. The Gulf, Colorado & Santa Fe has let a contract to Robert E. McKee, El Paso, for a one-story outbound freight house, and an extension for the present inbound freight house. Bids were closed January 10 for two warehouses and a storehouse at Cleburne.

Big Spring. The Texas & Pacific has let a contract to Robert E. McKee, El Paso, for a 23-stall enginehouse and other terminal facilities at this point.

Locomotive Orders

According to reports filed with the A.R.A., locomotives in need of repair on the Class I railroads, January 15, totaled 8,661 or 15.3 per cent of the number on line, 8.2 per cent in need of classified repairs, and 7.1 per cent in need of running repairs. This was an increase of 999 compared with the number on January 1, at which time there were 7,662 or 13.6 per cent. Serviceable locomotives in storage, January 15, totaled 6,193 compared with 6,213 on January 1.

The Central of New Jersey is inquiring for five Pacific type and five switchers; Aliquippa & Southern, one or two switchers; Alton & Southern, one switcher.

Baldwin received the following orders: American Smelting & Refining Co., one 4-6-0 type; St. Louis-Southwestern, ten 4-8-4 type; Seaboard Air Line, eight 2-10-0 type. Lima received the following orders: Boston & Albany, 15 2-8-4 type; Chesapeake & Ohio, 20 2-10-4 type; Hocking Valley, 20 2-10-4 type; Pere Marquette, 15 extra tenders. American: Boston & Albany, five 4-6-4 type; Chesapeake & Ohio, 50 switchers and 40 extra tenders; Denver & Rio Grande Western, 10 Mallets; Hocking Valley, 15 switchers; Pere Marquette, 15 switchers. The New York Central ordered three oil-electric locomotives from American and General Electric; American Steel & Wire Co., one 70-ton oil-electric from Westinghouse Electric & Mfg. Co.; Great Lakes Steel Corpn., two oil-electric switchers from the same company; International Railways of Central America, three 2-8-2 type from H. K. Porter Co.

Passenger Car Orders

Orders for passenger cars placed since the January issue of Transportation include the following: Great Northern, one baggage and mail gas-electric car from J. G. Brill; Missouri Pacific, 10 coaches from the St. Louis Car, and five parlor-dining cars from Pullman; New York Central, 10 dining cars from Pullman; Pennsylvania, five combination passenger and baggage gas-electric rail motor cars from J. G. Brill; International Railways of Central America, five first class coaches, seven second class coaches and three baggage cars from American Car & Fdy.; New Haven, 33 multiple-unit cars from Osgood-Bradley.

The Burlington is inquiring for 10 baggage cars; Milwaukee, two dining cars; Erie, 10 gas-electric cars; Gulf, Mobile & Northern, two gas-electric, three trailers and one observation car; Illinois Central, two rail motor cars; Southern Pacific, 15 electric street cars; Bangor & Aroostook, 12 sets of underframes and 12 sets of trucks for passenger coaches.

Freight Car Orders

According to reports filed by the carriers with the car service division of the A.R.A, Class I railroads on January 15 had 118,916 freight cars in need of repair or 5.4 per cent of the number on line, 3.9 per cent in need of heavy repairs and 1.5 per cent in need of light repairs. This was an increase of 109 cars over the number in need of repair on January 1, at which time there were 118,807 or 5.4 per cent, which marked the low record for recent years.

The American Refrigerator Transit Co. is inquiring for 1000 refrigerator cars; Milwaukee, 500 single deck stock cars and 250 double deck stock cars; Green Bay & Western, 125 box cars; Missouri Pacific, 20 cabooses; Aluminum Co. of America, 25 hoppers; Anglo-Mexican Petroleum Co., Ltd., five tank cars; General Chemical Co., 15 tank cars; International Railways of Central America, 25 box cars, 35 stock cars and 25 flat cars; John A. Roebling's Sons Co., from one to six bloom cars. The Seaboard Air Line is now inquiring for 2000 box cars.

The outstanding orders of the month are those of the Chesapeake & Ohio for 5000 cars; Hocking Valley, 1500 cars; Pere Marquette, 4850 cars; Milwaukee, 2300 cars, and the Erie 2150 cars. The Chesapeake & Ohio order was placed as follows: 1500 gondolas with American Car & Fdy., 1500 box and 1500 hoppers with Standard Steel, 500 box with Pressed Steel; Hocking Valley, 1500 gondolas with American Car & Fdy.; Pere Marquette, 1500 box with Standard Steel, 1500 automobile with Pullman, 750 gondolas with Ralston Steel, 250 gondolas with Greenville, 500 automobile and 250 furniture

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cars with Pressed Steel, 100 flat cars with Bethlehem Steel; Milwaukee, 500 gondolas with Bettendorf, 500 gondolas with Pressed Steel, 500 box with American Car & Fdy., 200 box with Pacific Car & Fdy., 300 flat with Pullman, 300 flat with Ryan Car; Erie, 800 hoppers with Standard Steel, 100 automobile and 100 furniture cars with Pressed Steel, 450 gondolas with Greenville, 500 box and 200 automobile with American Car & Fdy. Other orders include the following: Canton Tank Car Co., 1000 tank cars from American Car & Fdy.; Burlington, 500 automobile cars from Pressed Steel, and 100 flat cars from own shops; New Orleans Great Northern, 200 gondolas from own shops; Pennsylvania Tank Line, 600 tank cars from Petroleum Iron Works; Southern Pacific, 300 automobile-furniture cars from Pressed Steel, and 100 gondolas from Ralston; Texas Co., 325 tank cars from American Car & Fdy.; Union Oil Co. of California, 60 tank cars from General American Tank; Anglo-Chilean Consolidated Nitrate Corpn., 210 flat cars from Magor; Eastman Kodak Co., two tank cars from General American; Hercules Cement Co., nine cement cars from Standard Steel; Manila Railroad, six ballast cars from American Car & Fdy.; Stauffer Chemical Co., one tank car from General American; Union Gas & Electric Co., one well car from St. Louis Car; Swift & Co., 300 underframes from Bettendorf Co.; Bangor & Aroostook, 200 underframes and Superstructures for box cars from Pressed Steel. The Texas Co. also ordered 600 tank cars to be operated under lease from the Petroleum Iron Works.

Executive & Operating

Willard F. Place, assistant to vice president of the New York Central, with headquarters at New York, has been appointed assistant vice president, finance and corporate relations. **J. J. Brinkworth,** division superintendent with headquarters at Columbus, has been appointed to the same position on the Buffalo division, succeeding **W. A. Hamler,** transferred to the Pennsylvania division. **D. L. Sommerville,** division superintendent, with headquarters at Corning, N. Y., has been appointed assistant to the general superintendent, second district.

Clive Runnells, vice president of the Pullman Car & Mfg. Corpn., with headquarters at Chicago, has been elected to the same position with the Pullman Company.

R. S. Marshall, vice president of the Chesapeake & Ohio and the Hocking Valley, with headquarters at Cleveland, has been elected vice president of the Pere Marquette.

C. W. Brecht has been appointed assistant to the vice president in charge of operation and maintenance of the New York, Chicago & St. Louis with headquarters at Cleveland.

W. W. Sullivan, assistant to the president of the Chicago Great Western, with headquarters at Chicago, has resigned. The position of assistant to the president has been abolished. **J. E. Rhodes** has been appointed supervisor of stations with headquarters at Oelwein, Ia.

O. I. Paulson has been appointed assistant supervisor of agriculture of the Union Pacific System, with headquarters at Portland, Ore., succeeding **Charles C. Gignoux,** deceased.

F. L. Myers, assistant general manager of the Southern district of the Santa Fe, with headquarters at Amarillo, Texas, has returned to his duties after a leave of absence of six months, succeeding **J. B. Briscoe,** acting assistant general manager, who has taken up his former duties as superintendent of the Plains division with the same headquarters. **C. S. Cravens,** acting superintendent of the Plains division, has been transferred to the Pecos division with headquarters at Clovis, N. M., to succeed **C. E. Smyer,** transferred to the Arkansas division to replace **J. R. Skillen,** assigned to other duties. **C. W. Nelson,** assistant superintendent at Kansas City, has been appointed superintendent of the Kansas City division with the same headquarters to succeed **H. M. Duncan,** deceased. **W. C. Bassett,** assistant superintendent of telegraph of the Coast lines, with headquarters at Los Angeles, has retired under the pension rules of the company after 42 years' service.

H. T. Coleman, assistant manager of mail, baggage and express traffic of the Illinois Central with headquarters at Chicago, has been appointed acting manager of mail, baggage and express traffic, with the same headquarters to succeed **H. C. Fairchild,** who has been granted leave of absence.

M. J. Flanigan, assistant to the general manager of the Milwaukee with headquarters in Chicago, has been appointed manager of the safety department with the same headquarters. **W. L. Ennis,** supervisor of refrigeration, has been appointed manager of refrigeration service and claim prevention following the consolidation of the two bureaus. **N. A. Wicke,** superintendent of the claim prevention bureau, has been appointed assistant manager of refrigeration and claim prevention bureau. Both will have headquarters in Chicago.

W. R. Eble, trainmaster on the Hannibal division of the Burlington, with headquarters at Hannibal, has been appointed transportation assistant to the general manager of the lines east of the Missouri river with headquarters at Chicago.

H. A. Empie, superintendent of the Champlain division of the Delaware & Hudson with headquarters at Plattsburg, N. Y., has been appointed purchasing agent with headquarters at Albany. **William Wallace,** trainmaster of the Saratoga division, has been appointed superintendent of the Champlain division with headquarters at Plattsburg succeeding Mr. Empie.

J. Ivan MacKay, assistant to the general superintendent of the British Columbia district of the Canadian Pacific with headquarters at Vancouver, B. C., has been appointed superintendent of the Nelson division with headquarters at Nelson, B. C., succeeding **P. Armstrong,** retired. **G. H. Baille,** chief clerk to the vice president at Winnipeg, has been appointed assistant to the general superintendent to succeed Mr. MacKay.

W. H. Woltemate, supervisor of the Reading, with headquarters at Philadelphia, has been appointed division engineer with headquarters at Tamaqua, Pa., succeeding **W. R. Dunn,** transferred to Reading.

Fred Myers, assistant division engineer of the Michigan division of the Big Four, with headquarters at Wabash, Ind., has been appointed resident engineer at Cleveland.

F. C. Chandler, roadmaster on the Atlantic Coast Line, with headquarters at Kissimmee, Fla., has been appointed general roadmaster on the northern district of the first division, with headquarters at Rocky Mount, N. C., succeeding **T. J. Joyner,** granted leave of absence.

E. L. Wood has been appointed assistant engineer of the Mississippi Central, with headquarters at Hattiesburg, Miss.

W. W. Salisbury, roadmaster on the Kansas City terminal of the Missouri Pacific, has been appointed assistant division engineer at the same point.

The Great Northern has made the following changes in personnel: **W. R. Smith,** assistant general manager, with headquarters at Great Falls, has been appointed general superintendent of the Western district, with headquarters at Spokane. **R. A. McCandless,** superintendent of the Minot division with headquarters at Minot, N. D., has been appointed general superintendent of the Central district, with headquarters at Great Falls, Mont. **M. L. Gaetz** has been appointed superintendent of the Minot division to succeed Mr. McCandless. **C. McDonough,** superintendent of the Cascade division with headquarters at Seattle, has been appointed general superintendent of the Lake and Eastern

PLACING AN ORDER WITH RALSTON INSURES

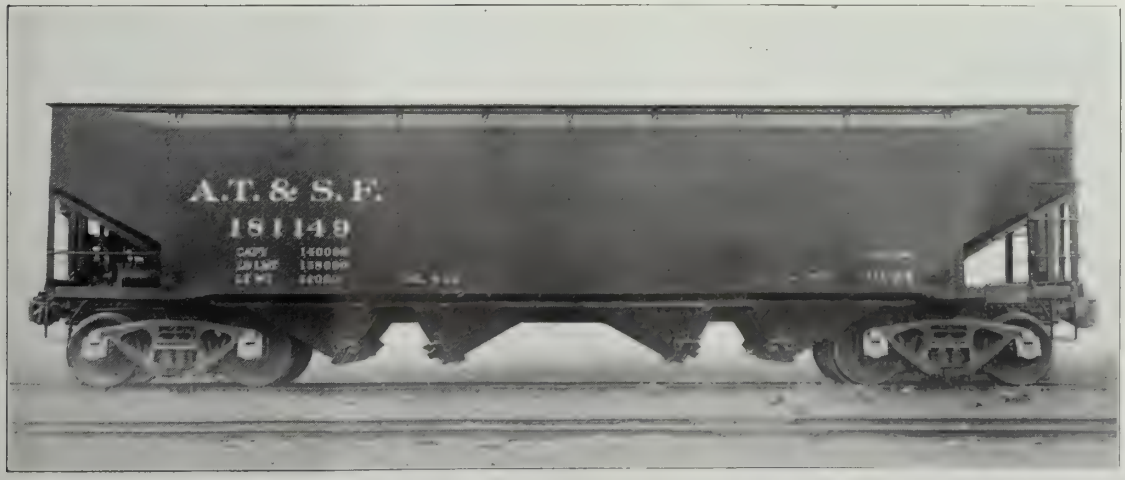
QUALITY

Every piece of material used in a Ralston built car is carefully selected and tested. The highest grade of skilled workmen are employed under careful supervision and inspection.

QUICKLY

The layout of the Ralston plant, and its facilities, insures a well balanced program which keeps the cars moving through our plant on regular schedule.

RALSTON STEEL CAR CO.
COLUMBUS, OHIO



STEEL CARS COMPLETELY REBUILT IN RECORD TIME

districts with headquarters at St. Paul. **J. B. Smith,** superintendent of transportation, has been appointed general superintendent of transportation with headquarters as before at St. Paul, a newly created position. All of the general superintendencies are newly created positions. **O. A. Weir** succeeds Mr. Smith at St. Paul. **M. J. Welsh** has been appointed superintendent of the St. Cloud division with headquarters at Minneapolis. **I. E. Manion** has been appointed superintendent of the Wilmar division with headquarters at Wilmar, Minn., succeeding **J. A. Frogner,** transferred to the Montana division with headquarters at Havre, Mont. Mr. Frogner succeeds **A. E. Knights,** transferred to the Cascade division with headquarters at Seattle.

P. S. Lewis, superintendent of the Atlantic City Railroad, has been appointed superintendent of the New York division of the Reading with headquarters at Philadelphia, succeeding **W. F. Eckert,** assigned to special duties in the general manager's office. **J. S. Goodman,** division engineer at Reading, has been appointed superintendent to succeed Mr. Lewis.

Hugh P. Greenough, superintendent of the El Paso-Amarillo division of the Rock Island with headquarters at Dalhart, Texas, has retired after 54 years in the service of that railroad. **H. E. McMullen,** assistant superintendent, has been appointed superintendent to succeed Mr. Greenough. **R. M. Borden,** chief clerk to the general manager of the first district at Des Moines, has been appointed assistant to the general manager with the same headquarters, succeeding **H. F. Reddig,** deceased.

H. E. Wilson, superintendent of the Alleghany and Bradford divisions of the Erie with headquarters at Salamanca, N. Y., has been transferred to the Kent division with headquarters at Marion, O. **T. J. Murphy,** trainmaster of the Susquehanna division, succeeds Mr. Wilson. **H. D. Barber,** assistant superintendent of the Marion division with headquarters at Chicago, has been appointed superintendent of the Meadville division with headquarters at Meadville, Pa. **W. N. Sporleder** succeeds Mr. Barber.

J. L. Kendall, superintendent of the De Quincy division of the Gulf Coast Lines, has been transferred to the eastern division of the Missouri Pacific with headquarters at Jefferson City, Mo., to succeed **T. W. Cheatham,** granted leave of absence.

O. E. Maer, superintendent of the Wichita Valley with headquarters at Wichita Falls, retired from active service after 45 years in railway service, 20 of which were spent with the Wichita Valley.

Financial & Legal

William C. Wishart, comptroller of the New York Central Lines, with headquarters in New York, has been appointed vice president in charge of accounting, with the same headquarters. **Le Roy V. Porter,** assistant comptroller, has been appointed comptroller to succeed Mr. Wishart.

F. D. Sanborn, assistant auditor of freight accounts of the Southern Pacific with headquarters at San Francisco, has been appointed auditor of freight accounts with the same headquarters. **P. H. Todd** has been appointed assistant auditor of freight accounts succeeding Mr. Sanborn.

Frank W. Taylor

Archibald Davis Daniel, passenger traffic manager of the Atlanta, Birmingham & Coast with headquarters at Atlanta, has been appointed auditor.

The Pennsylvania announces that **Burton E. Lockwood,** chief accountant in the office of the auditor of freight traffic at Philadelphia, retired from active service under the pension rules of the company February 1. Mr. Lockwood has spent almost 41 years in railroad work.

Purchases & Stores

Frank W. Taylor, purchasing agent of the Southern Pacific for the past 13 years, has been promoted to the position of general purchasing agent, with headquarters as before at San Francisco. Mr. Taylor's jurisdiction is to cover the purchase of rail, equipment and all materials. Mr. Taylor was born in Campbello, N. B., and began his railroad career at an early age with the Union Pacific at Laramie, Wyo.

James L. Cowan, assistant purchasing agent of the Southern Pacific, with headquarters at Houston, has been appointed purchasing agent of the Texas and Louisiana lines, with headquarters at New Orleans.

W. C. Bower, manager of purchases and stores of the New York Central Lines, has been appointed vice president in charge of purchases and stores with headquarters at New York.

A. Riley, assistant purchasing agent of the New York, Ontario & Western, with headquarters at New York, has been appointed purchasing agent with the same headquarters.

Traffic

Charles J. Brister, assistant vice president of the New York Central Lines with headquarters in Chicago, has been appointed vice president in charge of traffic of the New York Central and Pittsburgh & Lake Erie with the same headquarters. **Loren V. Vosburgh,** traffic manager of the New York Central and Ohio Central Lines with headquarters in New York, has been appointed vice president in charge of passenger traffic of the New York Central and Pittsburgh & Lake Erie with the same headquarters. **William K. Stevenson,** traffic manager of the Big Four with headquarters at Cincinnati, has been elected assistant vice president of the New York Central lines with headquarters at Chicago. **Daniel M. Bowman,** passenger traffic manager of the Big Four, with headquarters at Cincinnati, has been appointed passenger traffic manager of the New York Central Lines west of Buffalo with headquarters at Chicago. **R. J. Menzies,** assistant traffic manager of lines, Buffalo and east, has been appointed traffic manager with headquarters at New York. **Louis W. Landman,** passenger traffic manager at Chicago, has been appointed general passenger traffic manager of the lines west of Buffalo with the same headquarters, including jurisdiction over the Big Four, the Michigan Central and the Pittsburgh & Lake Erie. **F. O. Stafford,** assistant traffic manager of the lines west of Buffalo, has been appointed traffic manager with headquarters as before in Chicago. **F. H. Madison,** traveling freight agent with headquarters at San Francisco, has been appointed assistant general agent of the freight department with the same headquarters.

The Canadian National has appointed **Robert L. Burnap,** assistant general freight traffic manager at Burlington, Vt., vice president in charge of traffic with headquarters at Montreal succeeding **A. T. Weldon,** retired. **H. H. Melanson,** general passenger traffic manager with headquarters at Montreal, has been

Boosters Produce Smoother Operation On the Northern Pacific

"THE 4-8-4 passenger locomotives with boosters handle our heaviest coast trains between Jamestown, N.D. and Glendive, Montana; also between Livingston, Montana, and Missoula, Montana, distances of 323 and 240 miles respectively.

"The Boosters on passenger locomotives are used principally in starting trains after station and other stops, resulting in more rapid acceleration and the ability to start heavy passenger trains without jerking and rough handling, producing smoother operation. In addition to the above, the Boosters are of valuable assistance in handling heavy trains in mountain territory when adverse weather conditions and poor rail prevail."

H. E. Stevens, Operating Vice-President,
Northern Pacific Railway

FRANKLIN RAILWAY SUPPLY CO., Inc.

New York Chicago St. Louis San Francisco Montreal

appointed assistant traffic vice president with the same headquarters. **A. B. Chown,** general passenger agent of the Grand Trunk with headquarters at Chicago, has been appointed passenger traffic manager with the same headquarters. **Walter Eastman,** assistant general passenger agent, succeeds Mr. Chown as general passenger agent. **Albert A. Gardiner,** general passenger agent with jurisdiction respecting tran-Atlantic and trans-Pacific passenger traffic with headquarters at Montreal, has been appointed assistant general passenger traffic manager with the same headquarters. **Guy Thomas Pettigrew,** general freight agent of the Grand Trunk Western lines with headquarters at Detroit, has been appointed assistant general freight traffic manager with headquarters at Montreal. **R. E. Perry,** general freight agent with headquarters at Montreal, has been appointed assistant freight traffic manager with headquarters at Toronto.

The Great Northern announces that **P. H. Burnham** has been appointed western traffic manager to succeed **M. J. Costello,** deceased. Mr. Burnham began his career with the Great Northern in 1897 as a clerk in the freight offices at St. Paul. As western traffic manager, with headquarters at Seattle, Mr. Burnham has charge of traffic affairs of the railway's lines west of Montana.

The Southern Railway announces the following changes in personnel: **C. A. Russell,** assistant freight traffic manager with headquarters at Memphis, has been transferred to Birmingham to succeed **W. T. Turner,** transferred to Washington, D. C. Mr. Turner succeeds **R. H. Morris,** assistant freight traffic manager, transferred to Louisville. **William Humphreys,** assistant general freight agent at New Orleans, has been appointed assistant freight traffic manager, with headquarters at Memphis. **Charles Lauer,** general agent with headquarters at Havana, Cuba, has been appointed assistant freight traffic manager at New Orleans succeeding Mr. Humphreys.

J. C. Winfield, general freight agent of the St. Louis-Southwestern with headquarters at Tyler, Texas, has been appointed assistant traffic manager with the same headquarters.

Thomas Robertson Bryan has been appointed general passenger agent of the Atlanta, Birmingham & Coast with headquarters at Atlanta.

G. H. Logan, assistant general freight agent of the Colorado & Southern with headquarters at Denver, has been appointed general freight and passenger agent with the same headquarters. **F. F. Crabbe,** chief clerk to the traffic manager at Denver, has been appointed assistant general freight agent succeeding Mr. Logan.

The Northern Pacific announces that **G. F. McNeill,** assistant general passenger agent with headquarters in Minneapolis, retired at the age of 70 under the pension rules of the company. Mr. McNeill had been in the service of the Northern Pacific for 45 years. **C. S. Kirkland** has been appointed general agent, passenger department, and will take over the duties formerly performed by Mr. McNeill.

P. H. Burnham

B. F. Moffatt, assistant freight traffic manager of the Minneapolis & St. Louis with headquarters at Minneapolis, has been appointed freight traffic manager with the same headquarters.

J. B. McCorkle, general coal freight agent of the Pennsylvania with headquarters at Pittsburgh, has been appointed coal traffic manager with the same headquarters, succeeding **Samuel A. Latimer,** deceased. **George R. Richardson,** chief of the freight traffic bureau, has been appointed assistant general freight agent at Philadelphia. **G. A. Hill,** division freight agent at Chicago, has been appointed assistant general freight agent with the same headquarters. **H. H. Gray,** division freight agent at Pittsburgh, has been appointed assistant general freight agent with the same headquarters. **Frederick H. Parker,** assistant general freight agent, has been appointed general freight agent with headquarters as before at St. Paul.

J. Douglas, assistant general freight agent of the New Haven with headquarters at Boston, has been appointed assistant to the vice president, traffic department, with headquarters at New Haven.

Charles M. Andrews, assistant general freight agent of the Southern Pacific with headquarters in Portland, has been appointed assistant general freight and passenger agent with headquarters in Seattle. **Lester A. Brockwell,** district freight agent at Portland, has been appointed assistant general freight agent to succeed Mr. Andrews.

Mechanical

Peter B. Rogers has been appointed superintendent of the Santa Fe car works at Chicago, succeeding **G. D. Woods,** retired. **B. F. Harmon,** assistant superintendent of the locomotive department of the San Bernardino shops, has been appointed superintendent of the Albuquerque shops, succeeding **D. E. Barton,** assigned to other duties. **Henry C. Moore,** erecting shop foreman at San Bernardino, has been appointed assistant superintendent, succeeding Mr. Harmon.

F. F. McCarthy, district superintendent of motive power, of the New York Central lines west of Buffalo, with headquarters at Elkhart, Ind., has been appointed special assistant superintendent of motive power, with headquarters at Cleveland. **J. J. Wenzel,** master mechanic at Elkhart, has been appointed acting superintendent of motive power, succeeding Mr. McCarthy.

The Northwestern Pacific announces that **R. Salkeld,** master mechanic, has been appointed superintendent of shops, with headquarters at Tiburon, Cal. **O. B. Cavanaugh,** master car repairer, has been appointed master mechanic with jurisdiction over motive power and car departments, including maintenance of electric car equipment, with headquarters at Tiburon. The position of master car repairer has been abolished.

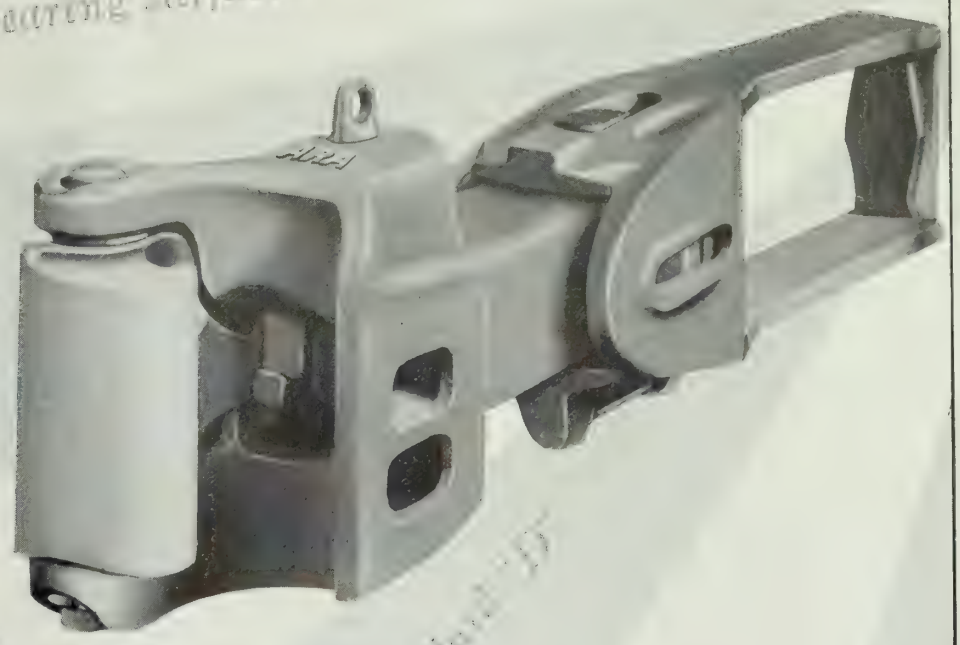
The Oregon-Washington Railroad & Navigation Co. has consolidated the positions of fuel supervisor and general air brake inspector, and appointed **John Daniels,** former fuel supervisor, to this position, with headquarters at Portland.

Hugh Ronalds, assistant master mechanic of the Lehigh & New England, with headquarters at Pen Argyl, Pa., has been appointed master mechanic, with the same headquarters, succeeding **R. L. Wyman,** deceased. The office of assistant master mechanic has been abolished.

H. A. Harris, general car foreman of the Chicago & Alton, with headquarters at Bloomington, Ill., has been appointed acting master car builder, with the same headquarters, succeeding **P. W. Helwig,** granted a leave of absence. **J. E. Ong,** assistant general car foreman, will succeed Mr. Harris.

John Clark, general foreman, freight

American Radial Coupler



Enlarged wearing surfaces

Even matching wear regardless of angularity

Resists effectively accumulation of slack

Only one pocket per car set heavier than Standard "D"

Couplers and horizontal key yoke

Protects both car and lading

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

car department of the Central of New Jersey, with headquarters at Ashley, Pa., has been appointed superintendent of the car department, with headquarters at Jersey City.

S. B. Andrews, mechanical engineer of the Chesapeake & Ohio, with headquarters at Richmond, Va., has been appointed engineer of motive power of the advisory mechanical committee of this company, the Erie, the Hocking Valley, the New York, Chicago & St. Louis, and the Pere Marquette, with headquarters at Cleveland.

Civil

Richard E. Dougherty, engineering assistant to the president of the New York Central Lines, has been appointed vice president in charge of improvements and developments, with headquarters in New York.

J. G. Wishart has been appointed principal assistant engineer of the Rock Island Lines, with headquarters at Chicago. **H. T. Livingston,** division engineer of the Arkansas-Louisiana division, with headquarters at Little Rock, has been appointed engineer of construction, with headquarters at Chicago. **Fred P. Funda,** office engineer in the maintenance of way department, with headquarters at El Reno, Okla., has been appointed division engineer to succeed Mr. Livingston.

Charles D. Purdon, consulting and valuation engineer of the St. Louis-Southwestern, with headquarters at St. Louis, retired January 1, after 56 years in railway service, of which 20 were spent in the service of the Cotton Belt Lines.

Vincent H. Doyle, office engineer of the valuation department of the Chesapeake & Ohio, has been appointed valuation engineer of the Pere Marquette, with headquarters at Detroit.

R. P. Haberson, resident engineer of the Spokane, Portland & Seattle, with headquarters at Portland, retired after 34 years in the service of that railroad.

The Burlington announces that **E. L. Potarf,** division engineer with headquarters at Alliance, Neb., has been appointed engineer maintenance of way, Wyoming district, with the same headquarters, succeeding E. H. Piper, transferred to Lincoln, Neb.

Frank E. Sampson, division engineer of the Boston & Maine, with headquarters at Springfield, Mass., has been appointed assistant engineer, with headquarters at Boston. **John F. Spain** has been appointed supervising cost engineer, with headquarters at Boston. **Henry C. Archibald,** assistant division engineer, Fitchburg division, with headquarters at Fitchburg, Mass., has been appointed division engineer, Connecticut River division, with headquarters at Springfield, to succeed Mr. Sampson. **H. S. Ashley,** assistant division engineer, with headquarters at Dover, N. H., succeeds Mr. Archibald at Fitchburg.

F. C. Kronauer, assistant division engineer of the New York division of the Erie, with headquarters at Jersey City, has been appointed division engineer of the New York terminal division, with the same headquarters, succeeding **P. Sabbott,** transferred to Youngstown, Ohio.

R. P. Long, division engineer of the Chicago Terminal division of the Wabash, has been transferred to the Moberly division, with headquarters at Moberly, Mo., succeeding **V. R. Hayes,** transferred to the Decatur division with headquarters at Decatur, Ill. Mr. Hayes succeeds **J. E. Danes,** retired.

Obituary

Capt. Albert H. Payson, an outstanding figure in western railroad activities for almost half a century, died January

HEAVIER POWER
REQUIRES SPECIAL MATERIAL
HUNT-SPILLER AIR FURNACE GUN IRON

Has been the standard material for the wearing parts of better engines for over a generation. Save money, wear and delay by specifying it for your

- Cylinder Bushing
- Cylinder Packing
- Piston—Piston Bull Ring
- Valve Bushing
- Valve Packing
- Valve Bull Rings
- Crosshead Shoes
- Knuckle Pin Bushings
- Pedestal Shoes & Wedges
- Driving Boxes
- Floating Rod Bushings
- Hub Liners

HUNT-SPILLER MFG. CORPORATION
J. G. Platt, Pres. & Gen. Mgr. — V. W. Ellet, Vice-President

Office and Works

383 Dorchester Ave. - South Boston, 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 997 Aqueduct Street, Montreal, P. Q.
Export Agent for Latin America: International Rwy. Supply Co., 30 Church Street, New York, N. Y.

26, in the Mills Memorial Hospital at San Mateo, Cal., aged 82. Capt. Payson was assistant to the president of the Santa Fe for more than 20 years, and alternated as president of the Northwestern Pacific.

D. W. Gross, assistant to the president of the Atlantic Coast Line, with headquarters at Wilmington, N. C., died January 23.

Henry H. Brigham, president of the North American Car Corpn., died unexpectedly in New York, January 4, aged 62. Mr. Brigham began his career as a telegraph operator for the Chicago & North Western, and founded the company of which he was head in 1907. He was one of the organizers of the old tourist business of the Booth Fisheries, and later was connected with the transportation department of Armour & So. He was also freight agent in Chicago for the Nickel Plate.

Frank L. Wood, assistant general manager of the Pullman Company, with headquarters at San Francisco, died in Seattle, December 7.

George Smith Shafer, president of the Norfolk & Portsmouth Belt Line, with headquarters at Norfolk, Va., died at his home in Portsmouth, January 29, aged 67.

Horace F. Smith, senior vice president of the Nashville, Chattanooga & St. Louis, died at Nashville, February 7, aged 81.

A. W. Anderson, president and general manager of the Charleston & Western Carolina, died at his home in North Augusta, S. C., February 3, aged 66.

James T. Robertson, general manager of the Cumberland & Pennsylvania, died January 9, at Cumberland, Md., aged 58.

E. L. Whittemore, chairman of the National Malleable & Steel Castings Co., Cleveland, died in that city, January 29.

Abraham Francis Huston, chairman of the Lukens Steel Co., died January 12 at his home in Coatesville, Pa., aged 78.

John H. Mitchell, general sales manager of the Standard Steel Car Co., with headquarters in Pittsburgh, died unexpectedly January 16, in New York, aged 58.

Clarence W. Hodges, general purchasing agent of the Worthington Pump & Machine Corpn., died January 17 at Paterson, N. J.

J. White Sprong, purchasing agent of the Delaware & Hudson, with headquarters at Albany, died January 5, aged 82.

Robert C. Andrews, district manager of the car service division of the American Railway Association, with headquarters at Dallas, died in that city January 13, aged 55.

J. H. Redding, general superintendent of the Pennsylvania, central region, with headquarters at Pittsburgh, died February 2, aged 53.

Maurice A. Welsh, superintendent and traffic manager of the Waterloo, Cedar Falls & Northern Railway, died January 18, in Chicago, aged 43.

H. M. Duncan, superintendent of the Kansas City division of the Santa Fe, with headquarters at Kansas City, died in that city January 14.

H. F. Reddig, assistant to the general manager of the first district of the Rock Island, with headquarters at Des Moines, died January 18.

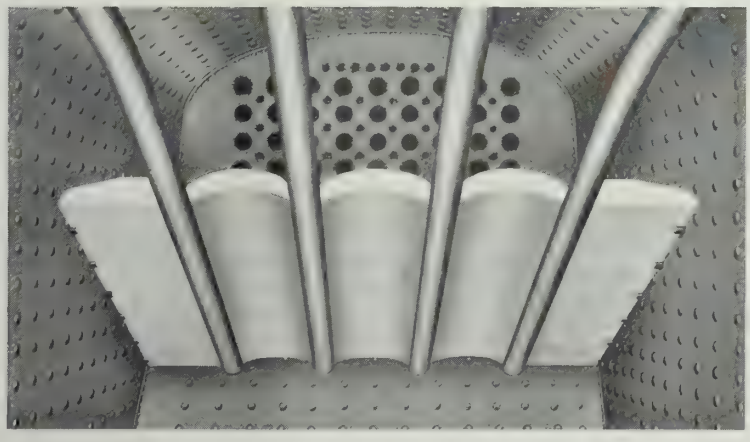
A. E. Smith, division engineer of the Burlington, with headquarters at Galesburg, Ill., died January 6.

John C. Peterson, assistant general freight agent of the Soo Lines, with headquarters at Minneapolis, died January 15, aged 56.

John W. O'Brien, superintendent of the Peoria division of the New York, Chicago & St. Louis, with headquarters at Lafayette, Ind., died January 27, aged 58.

ECONOMY

The NEWEST THING in ARCHES



The Economy Baffle Wall

by improving the combustion in your firebox lowers your fuel costs and improves your operating results. — It's not just the brick that counts, it's the method of application. May we show you the results other roads are getting by its use?

Economy Arch Company

Railway Exchange Bldg. **St. Louis, Mo.**

Supply Trade Notes

George M. Verity, president of the **American Rolling Mill Co.** since 1900, has been elected chairman and **Joseph H. Frantz,** first vice president for the past 16 years, vice chairman. **Charles R. Hook,** vice president and general manager, has been elected president but will retain the duties of general manager. Other appointments are: **Calvin Verity,** treasurer and assistant general manager, elected vice president and assistant general manager; **S. R. Rectanus,** assistant to Calvin Verity, vice president in charge of operations; **C. W. Davis,** assistant treasurer, elected treasurer; **E. N. Millan,** chief of construction, appointed chief engineer.

Benjamin O'Shea, president of the **Union Carbide Co.** and the **Electro Metallurgical Co.,** units of the **Union Carbide & Carbon Corpn.,** New York, has been elected chairman of each company. **Fred H. Haggerson,** former vice president of the two companies, succeeds Mr. O'Shea. **F. P. Gormley** has been elected vice president and general manager of both companies.

W. Homer Hartz, vice president and manager of sales of the **Morden Frog & Crossing Works,** Chicago, has been elected president, succeeding **Irving T. Hartz,** deceased. W. Homer Hartz was born December 11, 1887, at Tarrytown, N. Y., and was graduated from Purdue University in 1907.

Frederick Alan Schaff

Frederick Alan Schaff, vice president of the **Superheater Company,** has been elected president, **George L. Bourne,** retiring president, having been elected chairman of the board. Mr. Schaff's headquarters will remain at the principal office of the company, 17 East 42nd street, New York. Mr. Schaff was born at Nelsonville, Ohio, May 24, 1884, and was graduated from Purdue University in 1907. He spent several years in the mechanical departments of the Boston & Maine Railroad and the New York Central Lines. Following a period in Texas, in charge of business interests there, he became associated with the Superheater Company, in its service department, in 1913. He was elected vice president in 1915.

George C. Crawford, president of the Tennessee Coal Iron & Railroad Co., for the past 22 years, has been elected president, and chairman of the board of the **Jones & Laughlin Steel Corpn.,** with headquarters at Pittsburgh. **Herbert C. Ryding,** vice president in charge of operations of the **Tennessee Coal Iron & Railroad Co.,** since 1917, has been elected president, with headquarters at Birmingham, Ala., to succeed Mr. Crawford.

John F. Schurch has been elected vice president of the **Chatham Phenix National Bank & Trust Co.,** with headquarters in the Lincoln Bldg., New York City.

P. G. Jenks, vice president of the **Standard Steel Car Co.** at Chicago, has

FREIGHT IS CASH IN BANK

Railroad freight traffic continues to move with less delay than ever before. The increased speed in freight service has reduced the time to reach markets and has saved the farmer new capital and interest charges.

Recognizing that time is money, Southern Pacific is continually improving its facilities in order to carry valuable farm products to their destination in the least possible time.

The speed of a train may be substantially increased by use of modern automatic block signals. They permit trains to run under closer headway, reduce number of train stops, and otherwise cut road delays which consume time between terminals.

In 1920 there were 3,266 miles of Southern Pacific track equipped with block signals; in 1929 the company had 5,260 miles so equipped, an increase of 61 per cent over 1920. This year the railroad will install 275 additional miles of block signals. When this unit is completed all of the railroad's main lines will be fully equipped with block signals.

This substantial increase in signaling, intended to "save seconds safely," has an important bearing upon the time the shippers' goods are in transit.

SOUTHERN PACIFIC

George L. Bourne

C. C. Osterhout

been transferred to Paris, France, to take charge of the company's interests abroad.

T. W. Macon, traffic manager of the **General Railway Signal Co.,** with headquarters at Rochester, N. Y., has been appointed assistant to the vice president, with the same headquarters. In addition to his special duties, Mr. Macon will continue to have charge of domestic and foreign traffic in which he has been active with this company for the past 20 years. **Harry C. Frey,** general purchasing agent, has been appointed assistant to Vice President F. W. Moffett, with the same headquarters. **Elmer G. Knapp,** assistant purchasing agent, has been appointed purchasing agent, with headquarters at Rochester.

John A. Middleton has retired from active service as traffic manager of the **Eagle-Picher Lead Co.,** effective February 1, and has been appointed consultant traffic manager. He is succeeded by **Hamilton A. Gray,** for eleven years assistant traffic manager. Mr. Middleton started as a freight clerk with the Frisco in 1883. He became general freight agent in July, 1900, and subsequently freight traffic manager in 1904. Eight years later his jurisdiction was extended to cover the Chicago & Eastern Illinois Railroad. In October, 1917, he was transferred to Kansas City as executive general agent, but was called to Washington in December of the same year by Edward Chambers, director of traffic of the Railroad Administration. In October, 1918, he became traffic manager of the Eagle-Picher Lead Co.

C. C. Osterhout, former chief engineer of the **Rome Iron Mills,** Rome, N. Y., has been appointed manager of sales, Rome division of the **Wrought Iron Co. of America,** with headquarters at Lebannon, Pa. Mr. Osterhout was graduated from Cornell University in 1904, and became associated with the Rome Iron Mills in 1911 as chemist and engineer of tests. He was appointed assistant manager of sales in 1925, and manager of sales in 1929. Mr. Osterhout

A Transcontinental Trip is always Important...

Santa Fe

The ***business man*** never fails to exercise the privilege of choice. When he travels from Los Angeles to the metropolitan centers of the East, he chooses the route best organized to give the service he pays for. Speed, reliability, comfort and courtesy, plus dining excellence, mark the reasons for selection.

SANTA FE TRAINS, led by *The Chief*, have no rivals, and are certain to be the choice of thinking business men.

W. J. BLACK
Passenger Traffic Manager
CHICAGO

557

JAS. B. DUFFY
Ass't Passenger Traffic Manager
LOS ANGELES

HASCO Tell-Tales are easy to replace

THERE is no longer any necessity of sending a crew of men with a long, awkward ladder to replace bridge and tunnel warning tell-tales.

HASCO Tell-tales are easily removed and replaced by one man from the ground — this feature not only reduces maintenance costs but also eliminates any possibility of injury to employees making the replacement.

The HASCO method insures greater safety and lower maintenance costs.

The Hastings Signal and Equipment Co.
53 State Street, Boston, Mass.

will have exclusive charge of sales of Rome "superior" staybolt and Rome "perfection" engine bolt irons.

Norman C. Naylor, district sales manager of the **American Locomotive Co.** and the **Railway Steel Spring Co.,** with headquarters in Chicago, has been appointed vice president of both companies, with the same headquarters. **J. D. Finn,** assistant secretary of the American Locomotive Co., has been appointed assistant secretary. Both Mr. Finn and Mr. Banghart will have their headquarters in New York. **W. E. Corrigan,** district sales manager of the American Locomotive Co. and the Railway Steel Spring Co., at San Francisco, has been transferred to Cleveland. **O. R. Hale,** district sales manager at Pittsburgh, will succeed Mr. Corrigan at San Francisco.

W. Earle Pashley, advertising manager of the **C. F. Pease Co.,** Chicago, has been appointed assistant sales manager and second vice president, with headquarters at 813 N. Franklin street, Chicago. Mr. Pashley was also elected a member of the board, and in addition to his new duties will continue to be in charge of advertising, and all promotional activities of the company.

J. E. Buckingham has been appointed manager of the railroad department of the **Worthington Pump & Machinery Corpn.,** with headquarters at Harrison, N. J. **W. B. Savary** has been appointed assistant to the manager, with the same headquarters.

H. O. K. Meister, general sales manager of the **Hyatt Roller Bearing Co.,** Newark, N. J., has been appointed assistant general manager. **H. K. Porter,** assistant general sales manager, has been appointed general sales manager to succeed Mr. Meister.

Verl E. McCoy, former combustion engineer of the Milwaukee, has been appointed assistant to the president of the **Bird-Archer Co.,** with headquarters at 122 S. Michigan blvd., Chicago. Mr. McCoy was born December 17, 1900, at Lincoln, Neb. He was graduated from the Montana State College in mechanical engineering in 1925, and immediately entered the service of the Milwaukee as a special apprentice. He became combustion engineer in 1928. Mr. McCoy's new duties will have to do principally with the development of mechanical equipment of the Bird-Archer Co.

James Cleary, assistant general sales manager, and western manager of the **Combustion Engineering Corpn.,** with headquarters in Chicago, has been appointed general sales manager, with headquarters in New York.

Ralph Leavenworth, account executive of the **Austin Co.,** Cleveland, has been appointed assistant general sales manager.

The Louisville Frog, Switch & Signal Co. has appointed **George W. Bender,** 819 Dayton ave., as its representative in St. Paul. **L. R. Payton,** St. Louis representative, has moved his office from the Railway Exchange Building to 1101 Missouri Pacific Building.

The General Refractories Co., Philadelphia, has acquired all the refractory property of the **Evens & Howard Fire Brick Co.,** St. Louis, and will operate these plants as the Evens & Howard division.

A. S. Merz

The S. K. F. Industries, Inc., New York, has reorganized its railroad department. In future, the home office will handle directly, all sales, engineering and service matters of railroad equipment. A separate engineering division will have charge of railroad work. **H. E. Brunner,** chief engineer, will continue to direct the railroad department. **E. M. Harshbarger,** formerly in charge of sales work in the East, now has charge of all sales for the railroad department. **B. W. Taylor** will continue railroad engineering and service work.

The Mason Regulator Co. of Boston has appointed the **O'Brien Equipment Co.,** 2726 Locust blvd., St. Louis, as exclusive distributors in the Missouri territory. The Mason Regulator Co. products include a complete line of pressure regulators, damper regulators, balanced valves, and reducing valves.

The Massey Concrete Products Corpn. and the **Canadian Concrete Products Co., Ltd.,** have moved their Montreal office to Room 310, Dominion Square Bldg., 1010 St. Catherine street, West.

Final plans regarding the merger of the **Pittsburgh Forging Co.,** Coraopolis, Pa., and the **Greenville Steel Car Co.,** Greenville, Pa., were made at a meeting in Cleveland, January 27. The Pittsburgh Forgings Co. will acquire all the common stock of the Greenville Steel Car Co. which has assets of over $1,000,000. Twenty thousand additional shares of the Pittsburgh Forging Co. will be issued, making a total of 220,000 shares. Reported net earnings of the Greenville Steel Car Co. for 1929 were $220,245 after all charges and federal taxes, equivalent after the payment of $54,883 preferred dividends, to 75 cents a share. The Pittsburgh Forgings Co. reported net earnings of $475,818, or $2.38 a share on 200,000 shares.

A Hole in One

When an experienced reader encounters a story about some chap who started his earning career as a call boy, became a telegraph operator, passed to a fireman's shovel, and then became a locomotive engineer, he puts down the magazine and exclaims, "so now he owns a railroad." But this story is different. It has to do with the diverting activities of a New York man who did the things described in the first sentence, but who owns no railroad. The applause to which he now listens is given him because from the busy marts of trade he went out one day not so long ago to the Westchester Country Club's south course, and to the delight of a multitude, and his own amazement, made the 133-yard eighth hole in one solitary stroke. His name is A. S. Merz, and he represents the Standard Railway Equipment Co. at 247 Park avenue, New York. Of course there are other notable things to his credit, such as the rank of major during the World War, serving with the railway engineers in Russia under command of Col. George H. Emerson, now chief of motive power and equipment for the Baltimore & Ohio. But these marks of glory are as nothing when one thinks of the victory at Westchester. Envious players, of course, will say it was an accident. O, well.

Transportation

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The National Monthly
of the Transportation Industry

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No. 3

FEATURES *for March,* 1930

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Shifting Responsibility

IN AN editorial printed in this magazine last month it was shown that automobile accidents are increasing at an alarming rate. More than 31,500 persons were killed in 1929 in, or as a result of such tragedies, while only 77,118 American lives were lost in the entire World War. Motor vehicle accidents represented about one-third of all accidental fatalities in the country. Experts declare that neither increased population nor increased registration of motor vehicles can be held to account for the dreadful increase in fatalities. Government reports show that grade crossing fatalities, also, are increasing, and that such crossings are built faster than they can be abolished.

The decision of the United States Supreme Court holding that railroad tracks are themselves sufficient warning of danger will not, apparently, serve to reduce the number of accidents and deaths. It merely relieves railroads from judgments in damage suits. Wig-wag signals, quite evidently, have not sufficed. The tragic toll goes on increasing every year.

Still, a report read to the Engineers' Convention in Chicago, a few days ago, contained these words:

"The present standard (of signals at crossings) is adequate and reliable . . . Uniformity of indication throughout the country is a prime requisite, and it can not be obtained by using something else."

That is to say the committee on signals believes the roads have done everything possible. And this is a bad attitude for American railroad men to take.

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CHARLES DILLON, *Vice Pres. and M'ng. Editor*
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The best locomotives installed within recent years are so much better than most of those previously in service that economies could be effected by retiring many of the latter."

RAILWAY AGE, Jan. 4, 1930

LIMA LOCOMOTIVE WORKS INCORPORATED

—P & A Photo

A Night View of Chicago. The Most Brightly Lighted Structure is the Tribune Tower.

The Engineers At Chicago

By

C. E. Richard

WHEN THE yearly reports of a great railroad organization, such as the American Railway Engineering Association has come to be, have been read before the meeting is called to order, the chief human interest attaching to the event quite naturally is the banquet at which distinguished guests and members appear and speak their pieces. It is in this genial atmosphere that men relax under the influence of food and good fellowship. Here it is, too, that men of national, and very often of world-wide repute, discuss the topics of the day as they affect the business of transportation.

This was the situation at Chicago, the evening of March 12, when a thousand members of the A.R.E.A., the retiring officers and their successors, their guests of honor, and the wives and sweethearts from everywhere, sat around the tables in the Grand Ballroom of the Palmer House for the yearly dinner. The heaviest part of the work that called them to Chicago had been done. The convivial hour, as it is now understood in this arid land, had come. It was the climax of a really great gathering.

For technical gentlemen who are reputedly "staid" the delegates displayed the wildest enthusiasm when the head waiters solemnly marched in with two beautiful locomotives, designed in glass, followed by 100 waiters each carrying the dessert mounted on a lighted switch lamp. They applauded heartily too when Charles Donnelly, president of the Northern Pacific, spoke on "Railroad Consolidations," and laughed and laughed again with the witty Gus Dyer, professor of economics at Vanderbilt University, who had a serious subject called "The New Industrial Revolution," but who couldn't resist telling a score of really new banquet stories.

Just before Toast-master and Retiring President Louis Yager took over the gavel, Chairman W. D. Faucette handed Mr. Yager the beautiful "president's cup," highly praising the work he had done during 1929. Then arose L. A. Downs, president, Illinois Central R.R., who said:

"As a representative of the 20 living past presidents of this society I have been honored by being chosen to present a small token of our great admiration and affection for our secretary who, for 24 years, has served so faithfully and built up this association. He will be 70 years old tomorrow, so this really is a birthday present."

Thereupon Secretary Fritch was brought forward to receive a handsome watch. Mr. Fritch was cheered for a long minute by the risen assembly.

Mr. Donnelly very effectively presented the argument for modification of existing provisions of the Transportation Act as affecting railroad consolidation. "It implies no criticism of the Interstate Commerce Commission," said he, "to say of the consolidation plan promulgated last December that, on the whole, it satisfies no one; because, considered as a whole,

it does not satisfy the commissioners themselves. The most that can be said for it is that it is at least a formal compliance with the mandate of congress, represents perhaps as good an attempt as could be made to solve an otherwise insoluble problem, and proves as nothing else could have proved, how well advised the commission has been in asking to be relieved of the necessity of solving it. It may be hoped, too, that out of the practical demonstration it affords of the unworkability of the general consolidation provisions of the present law a new impetus may be given to the demand for their repeal.

"It does not follow, however, that the movement looking to a reduction in the number of our railroad operating units should be abandoned, or that the spirit which informed the legislation of 1920 is in any sense to be deprecated. That it is impracticable to divide and cast the 260,000 miles of railroads of the United States into some 20 moulds has indeed been shown, and the commission openly recognizes it.

"But this means only that a particular method of attaining an eminently desirable end must be discarded in favor of a better one. It is as important now as it ever has been that the great railroad systems of the country should be strong and self-sustaining; that their number should not be excessive; and that the operations of distinct companies should be coordinated and unified when this will promote efficiency and economy, and the interests of the public are duly protected. That much may be done within these limits no one familiar with the operation of American railroads will deny; but the integrating process should be natural and gradual, and not undertaken in fulfillment of an arbitrarily pre-conceived plan.

"To this end the consolidation bill now pending in congress, or one framed along similar lines, ought to be enacted speedily. That bill repeals the provisions of the existing law requiring the promulgation of such a general plan as was announced by the commission last December, and it authorizes the unification of carriers 'in any case in which, in the opinion of the commission, such unification will promote the public interest.' It requires the commission, in determining the public interest, to give due consideration to the maintenance of competition, the preservation and improvement of service, the promotion of economy, the securing of a simplified and more effective regulation of carriers, and the ultimate establishment of a number of strong and efficient systems."

L. W. Baldwin,
President, Missouri Pacific Ry.,
First Vice President, A.R.E.A.

Among the highlights of Professor Dyer's speech were these:

"The story of industrial development in the world is the story of transportation. The story of the political, moral, social and educational development of the world is largely the story of transportation. The study of the facilities for transporting men and goods through the ages, is the study of the evolution of civilization.

"It was the new transportation system, propelled by steam, that revolutionized the industrial conditions of the world, as well as the general life-conditions of the people, because they have been modeled and shaped by the new order of things. It was this revolution that led science into transportation and created the really big field for the engineer. Up to this time, the brains of the world steered clear of the world of industry.

"For the first time in human history business men are in the saddle and henceforth, it would seem, they are to direct and control human destinies and shape the course of civilization.

"The steam revolution was decidedly centralizing in its general effect. Under its influence, industry, business in general, and population, soon became highly centralized. Simultaneously, the political, religious, educational and social followed industry in the centralizing trend.

"There is now at hand another newer and industrial revolution, and again it is a transportation revolution. It is driven by a combination of electricity and gasoline. Electricity could not do very much in revolutionizing our life, until it hooked up with gasoline. But when these two forces joined, it meant a new world.

"A few years ago big industries competed to control. This has passed out or is passing out, because under the new order nobody can control. The only competition that counts today is the competition in service. The only way to succeed in business today is to give the public better service, or a service the public thinks is better, than that given by competitors. This new order of things demands revolutionary changes, revolutionary adjustments, revolutionary changes in methods of regulating business."

As for the convention, it is now history, made in a notable way by big men. Here we saw engineers from such faraway points as Shanghai, Moscow and Mexico City, and all parts of the United States and Canada, meeting with their technically-skilled brethren at the Palmer House, Chicago, March 11 to 13. Complicated problems and discoveries of their profession were discussed while a score of committees considered carefully worked out reports.

The convention marked the closing of President Louis Yager's successful regime, and the elevation of G. D. Brooke of Richmond, Va., to his place as president of the association. Mr. Brooke is general manager of the

Chesapeake & Ohio. He has been railroading since 1902, and spent 22 years with the Baltimore & Ohio and has since been with his present road. He has been a member of the A.R.E.A. since 1907, serving as chairman of two important committees, and also as a director since 1928.

M. J. (Mike) Gormley had the distinction of being a double-barreled speaker, something unusual in A.R.E.A. history, as he addressed the engineers at their first session, Tuesday morning, March 11, and also spoke before the Signal Section. Mr. Gormley read a message from President R. H. Aishton, who could not attend the convention. He then said Mr. Yager had asked him to add a few remarks to what Mr. Aishton had written. "I know one of the principal things he has in mind today is the question of extending the research in the various problems of railroad transportation," said Mr. Gormley. "When we were visiting the California Institute of Technology last week, we saw investigations being carried on there in the interests of aeronautics, and for the radio people and the American Telephone & Telegraph Company. It has been said that a concern like the American Telephone & Telegraph Company has made greater progress in scientific research than has been made by the railroads. I doubt whether any of you would subscribe to that statement, and yet we must admit it is easier for an organization under one head to get appropriations for research investigations than it is to coordinate the efforts of 165 or more railroads.

"I don't think there is a railroad in the United States today that would be earning one dollar of net revenue if it were not for the economies that have been brought about in transportation since 1923. The best evidence to that effect is the comparison of the operating expenses of 1920 with 1928. The net operating expenses in 1928, a heavy traffic year, were $1,250,000,000 less than in 1920. The basis for this reduction lies in capital expenditures which have been made by the railroads for improvements, about 40 per cent for equipment and 60 per cent for other improvements.

"It has been estimated that an increase of one ton per car in loaded cars will add $100,000,000 net revenue to railroad yearly earnings. We have found that not much attention has been paid to better utilization of equipment from the standpoint of heavier loading. We hope you will all give this your earnest consideration in the future and I believe you will."

G. D. Brooke
Newly-Elected President,
American Railway Engineering Association.

Retiring President Yager in his opening address said of the transportation industry and of recent activities:

"Recent reviews of the transportation picture are in general agreement that our railways as a whole were never in better physical and financial condition, rendering the highest quality of service in the history of our country. Notable are the well sustained faster schedules, insuring reliable delivery of commodities to an extent to influence distributors' stocks and capital turnover. The increased efficiency in handling traffic has resulted in cheapening products to consumers. Many factors have contributed to bring about this desired result. There has been an improvement in nearly all factors of performance by which efficiency of operation is judged, and it is significant that these are not directly attributable to the favorable influence of a marked increase in traffic volume.

"Construction activity of the past year as a whole has been greater, in a marked degree, than that of the average of the last few years, and has embraced a wide range of additions and betterments to roadway and structures, so characteristic of recent years."

Secretary Fritch read a long and comprehensive report dealing with the work of the 23 standing and four special committees. He said that the membership of the A.R.E.A is now 2856, an increase of 66 over March 1, 1929. Thirty members of the association died during the year. The secretary announced that after April 1, the offices of the association will be at 59 East Van Buren street, Chicago, instead of the present location.

The many committee reports were of a most searching and technical nature. Perhaps if any one report might be listed as outstanding it should be that of the committee on rail. Following a paper presented by Earl Stimson, chief engineer of maintenance of the B. & O., in support of a program for an extensive investigation of rails (the investigation is to cost $50,000 a year for a period of several years) the committee passed a resolution approving his plan. D. J. Brumley, chief engineer, Chicago Terminal Improvement, Illinois Central, proposed the resolution. The proposal calls for the financing of the investigation jointly by the carriers and rail makers.

The Tuesday evening showing of moving pictures of the association's delegates' trip to the Engineering Congress in Japan attracted a large crowd and much interest. A further report on the trip was made by President Yager.

Among the visitors to the convention from far points were Y. F. Zung of Shanghai, J. Montanez, division engineer from Acambaro, Guanajuato; L. Gonzales Pastor, terminals engineer from Mexico City, and J. M. Maronov, director general of the Soviet railways, with a large delegation from the state railways of the U.S.S.R.

The installation of newly elected or promoted officers for the coming year was a feature of the closing session, Thursday, March 13. These

newly elected or promoted officers are:

President, G. D. Brooke of Richmond, Va., general manager, Chesapeake & Ohio Ry.

First vice president, L. W. Baldwin of St. Louis, president, Missouri Pacific Lines.

Second vice president, J. V. Neubert of New York, chief engineer, maintenance of way, New York Central.

Secretary, E. H. Fritch of Chicago, re-elected.

Treasurer, A. F. Blaess of Chicago, chief engineer, Illinois Central.

New directors included G. W. Harris of Chicago, chief engineer of the Atchison, Topeka & Santa Fe; C. R. Harding of San Francisco, assistant to president of the Southern Pacific, and C. R. Knowles of Chicago, superintendent of water service, Illinois Central.

The reports presented were, as usual, varied and extremely comprehensive, from grade crossing protection to chemical treatment of water, investigations of stresses in railroad track, methods of drainage for railway roadbeds, and recommendations as to standardization in various railway engineering practices.

The report on grade crossings, which had been prepared in cooperation with the highway research board, discussed a number of devices designed to reduce accidents at highway grade crossings. These included a highway "Stop" and "Go" signal, designed to be operated from the cab of an approaching locomotive, and suggested by the engineering department of the Chicago Motor Club. Another device discussed was a highway crossing gate designed to lower automatically at the approach of a train and so constructed, on the far side, as to swing horizontally away from the tracks if pushed, to prevent an automobile from being blocked on the railroad right of way.

In the report on water service and sanitation, suggestions were made as to further protection from contamination which might be afforded to the drinking water supplied to passenger cars.

In one section of the report on railway roadbed, certain information was given which indicates that the life-long dream of amateur gardeners has been realized by the railroads, when it was reported that weed-killing is now carried on at a speed of 30 miles an hour. Vegetation growing in railway ballast and along the edges of the track is not only unsightly but also interferes with maintenance activities. Several methods of weed removal are used, classified generally as mechanical, steaming or burning, and chemical. Mechanical methods include manual work and the use of discing machines, harrows and motor-propelled mowers operating on the tracks. Burning usually is accomplished by a motor-driven machine using from three to six burners while steaming is done from a locomotive that supplies superheated steam delivered through pipes to nozzles mounted on a flat car and placed close to the ground. The 30-mile-an-hour speed, however, is reported for the chemical method of weed eradication, and is accomplished by a work train carrying pumps and sprays so governed as to deliver a constant quantity of the weed-killing liquid in a given distance, regardless of the speed at which the train is moving.

The use of radio telephones on railways was discussed here in the final session. Railway radio covers principally communication between the locomotive and the caboose on long freight trains, between locomotives and switch towers in switching yards, and between wayside stations and moving trains. Experiments in the use of radio in railway operation were begun in 1924 and have been continued to the present time.

Radio equipment for railroad service is divided into four general classes: two-way voice communication, one-way voice communication, a simple code system, and a one-way voice communication with a code reply. Installations of the various systems range in cost from around $1,600 to $5,500.

The advantages seen in the use of radio communication in railway operation are increased safety, saving of time, greater flexibility and longer range than visual signals, and independence of rain, snow and fog. Among the problems to be solved, however, are the present high costs of radio installation, the liability of minor failures under the severe conditions encountered in railroad service, and the danger of interference from other radio stations using the same, or nearly the same, wave length.

In the report presented it was stated that "the development of radio telephone communication for railroad service is proceeding rapidly and seems about to emerge from the experimental stage. This doubtless will follow unless the development is restricted by the federal radio commission. Because of the very limited number of radio frequencies available for use in this country and the large demand for frequencies from such services as aviation, police, television and ships at sea, it seems problematical whether the federal radio commission will issue permits for general use for railroad yard or train service."

In addition to radio use, discussed in a report on the economics of railway operation, further studies were presented on rivers and harbors, railway trestles and bridges, buildings, records and accounts, electricity, the economics of railway labor and of railway location, and railway cooperative relations with universities. One interesting report discussed the necessity for further improvement in the recruiting and education of railway employes, stating that "the demands upon railway personnel are becoming so exacting that only by an organized system can the railways meet the demands of the future with full assurance that they will be able to operate at the highest efficiency."

The Signal Section's Meeting

THE SIGNAL SECTION of the American Railway Association met in the Hotel Stevens, Monday morning, March 10, with 867 registrations. This was the 36th yearly convention. H. W. Lewis, signal engineer of the Lehigh Valley, chairman of the section, introduced H. E. Newcomet, vice president, western region, of the Pennsylvania Railroad.

Mr. Newcomet told of his great interest in signaling and of the success he had made with his road through the installation of an extensive automatic signaling system. He suggested a great display of apparatus showing the progress of signaling, to be held at the Century of Progress Exposition in Chicago in 1933. Nowdays, on-time delivery of freight cars, he said, averages over 90 per cent, and that 15 years ago such a performance would have been only a dream. He advocated the greater use of sig-

(Continued on Page 22)

A Fine Exhibit at the Coliseum

By

C. E. Richards

General View of the Main Exhibit Hall in the Coliseum, National Railway Appliances Association.

EXHIBITORS seemed vastly pleased this year on the closing day of the 22nd annual display by their organization, the National Railway Appliances Association, in the Chicago Coliseum. It attracted more than 5,000 railroad men, mostly delegates to the several conventions held in Chicago from March 10 to 13 inclusive. In addition, according to Secretary C. W. Kelly, over 50,000 "outsiders" attended the enormous showing of railroad accessories.

Color, which has come into so many phases of modern life, was predominant. From the sightly sunburst effect of the ceiling and walls on through the appliances themselves, the rainbow was there! Red and yellow and buff steam cranes; multicolored inspection and trackworkers' cars; bright red ice-melting machines; even the ditchers have gone over to color.

Labor-saving devices of all descriptions were shown until it looked as if nothing remains for men to do but press a button and keep a record. The great advance in electrical equipment was another striking feature.

There were 181 exhibitors, ten fewer than in 1929, but the total space used was equal to that of a year ago. In fact, the exhibit is limited only by the amount of space in the Coliseum. After its 70,000 square feet were utilized two of the exhibitors were found in a parking place south of the building.

The yearly business meeting for the election of officers was held Monday morning, March 10, with Vice President W. H. Fenley in the chair. Strangely enough President S. P. McGough of the Lorain Steel Company of Johnstown, Pa., who presided last year as vice president owing to the illness of the president of that time, was too ill this year to attend the exhibition. Mr. Fenley read a short presidential address from Mr. McGough in which the latter expressed his deep regret at not being able to attend, and in which he praised Secretary Kelly highly for his work in arranging and directing the exhibit. The officers for the coming year are:

President, W. H. Fenley, Kerite Wire and Cable Co., Chicago.

Vice president, A. S. Anderson, Adams & Westlake Co., Chicago.

Secretary, C. W. Kelly, Chicago.

New Directors:

L. E. Wolcott, U. S. Wind Engine & Pump Co., Batavia, Ill., for two years; H. W. Renick, Magnetic Signal Co., Los Angeles, re-elected for three-year term; Frank McAllister, Kalamazoo Railway Supply Co., for three years. Holdover directors: M. C. Beymer, J. T. McGarry, A. L. Greenabaum, J. W. Fogg.

Fairmont Railway Motor, Inc., had eight booths devoted to its large display of inspection cars, and on one day 25 representatives of this company were on the job at the exhibit. These included President Robert D. Sinclair, H. E. Wade, W. F. Kasper, and H. M. Starrett. Fairmont had eight classes of cars on exhibit, ranging all the way from the little one-man inspection machine, weighing 375 pounds up to the seven-ton "M 23" ballast dresser and drainage rig. The extra gang car and the "M 25" Little Discer attracted much attention. Mr. Sinclair pointed out the demountable wheel used on all cars, saying that tires may be changed on this wheel exactly as a gasoline motor car repairing is done.

The Johns-Manville Corpn. of New York had an extensive exhibit with four booth spaces, and displayed its Celite for concrete, the new Floridene stone for station walls and such, an asbestos wall tile as well as the Sanacoustic sound absorbing tile; transite asbestos pipe and ventilated smoke jackets and many other standard Johns-Manville products. The entire booth was built of transite material according to the genial Thomas O'Leary, Jr., who acted as guide. P. D. Mallay and a number of others were on the job.

The Chicago Pneumatic Tool Co. of New York, with J. L. Rowe, had another four-booth exhibit and featured the new CP self propelled Air

**W. H. Fenley,
President, N. R. R. A.**

Compressor Tie Tamper with its high powered motor car attachment. This great labor saver and boon to track workers, attracted many visitors.

The Buda Company of Harvey, Ill., with eight booths featured a most interesting, specially-built inspection car which was ready for shipment to San Salvador, Central America. The car was the only one of its kind ever built with complete toilet facilities, according to Sales Manager Secor. It is especially designed for use of officials traveling in the tropics.

The booth of the Creepcheck Company of New York attracted favoring attention because it was so simple. This year's feature of Creepcheck's unit anchor is the double notch, which makes its possible to "take up slack on the aging rail." Then, too, there was an enjoyable political and economic discussion with the Dinklages, A. J. and R. R.

Representatives of Thomas A. Edison Co. and Edison's Storage Battery Co. of Orange, N. J. were busy displaying their wares, especially the batteries as connected with a new "even flare" switch light. F. S. Stallknecht explained that the new light with its Corning Glass Works lens now gives the same spread of light from a small electric bulb that the oil lamp gave. The installation of a box of 1000 ampere-meter Edison primary cells gives a year of service without attention to this switch light.

The Kalamazoo Railway Supply Co. had its usual fine line of inspection cars and featured a model T-Ford turned into an inspection car with flanged wheels. You simply clamp your steering gear, get in and speed down the track, and the tires are just as easy to change as pneumatics. This railroad Ford has just been put on the market.

The Okonite Co. of Passaic had a striking display of train control wires, submarine cable, super-tension cable and the like. With its luxurious easy chairs the booth was extremely popular with weary reporters who were received by J. Delmar Underhill, R. N. Baker and others.

The Carnegie and Illinois Steel Company's joint display featured a new model pair of car wheels of 33 inches diameter, for single life freight cars of 70 tons (maximum) capacity, which J. C. Shields and R. L. Twitchell said have a narrower rim and weigh but 1220 pounds as compared to 1600 pounds for standard wheels.

The Dearborn Chemical Co. of Chicago showed its famous product "No-Ox-Id," and its salutary effect upon the inside of water tanks, on railway trackage and bridges. C. M. Hoffman was greeting old friends all week long.

The O. F. Jordan Co., East Chicago, Ind., displayed one of the giants of the show, the Jordan "Type "A-" Composite Spreader-Ditcher. This heavy duty "baby" weighs 140,000 pounds.

The Bethlehem Steel Co. showed an extensive and striking display, especially featuring its new Keystone No. 17 steel tie, which has a life far in excess of any wooden tie, according to W. B. Pritchard. The new tie was well displayed under rails on a decided grade. The No. 2 rail contour machine, and the hook flange guard rail, as well as the company's switch stand exhibit brought up the railroaders, old and young, to look things over.

The Woolery Machine Co. of Minneapolis had its Midget Octopus machine on the job. The Octopus melts ice in winter and burns weeds in summer, dries up station platforms, and generally makes itself useful to thrifty railroaders. H. E. Woolery was on duty at his booths.

The Northwest Company's red and yellow mighty shovel and crane stood near the P & H model in buff color, and both of them looked mighty efficient.

The Air Reduction Sales Co. of New York featured a new model of the National Carbide Light, in which the gas pressure controlled the feeding. E. M. Sexton and R. T. Peabody and others smilingly greeted all visitors to these booths.

"Bright rails for all yards" is the motto of S. W. Hayes and his staff of the Hayes Track Appliance Co. of Richmond, Ind., which displayed its new Type S Wheel stop. When these effective and inexpensive appliances are installed at track ends no switchman need leave rusty rails for fear of getting a car on the ground.

The Union Switch & Signal Company's elaborate display won unqualified admiration, especially with its train dispatching system, set to control 101 miles of railroad, and with its signal control flashing all along the board. K. E. Kellenberger said an increasing number of railroads were installing this "fool proof" and time-and-labor-saving system. The company's display also included the cab signal outfit now in use on 4,172 locomotives. The Union Switch &

An Aisle in the South Annex of the Chicago Coliseum Showing Displays of the National Railway Appliances Association.

Signal Company with its factory in Swissfield, Pa., has just completed its 50th year of service to the railroads.

The National Lock Washer Company of Newark, N. J., displayed its Super-and Hi-Power Spring Washers and its improved spring washers for railroad track joints as well as its double convolution spring washers for screw spikes.

The American Rolling Mill Company, Middleton, Ohio, called attention to its new spiral welded Armco-Ingot Iron Pipe, which can be turned out in long rolls without cutting. A beautifully colored photo display showing various angles of life in the rolling mills was also exhibited.

The Oxweld Railroad Service Co. of Chicago with its carbic flood lights was certainly able to light up any railroad yard.

Last but not least, one must mention the Reliance Manufacturing Co. of Massillon, Ohio, with its Hy-Crome Spring Washers and its high reaction Hy-Crome spring washer, all made from the same tested steel. Mr. Cowlin said the A. R. E. A. has recommended spring washers of this type, and that the Pennsylvania Railroad specifications recently called for Hy-Crome.

There's Always A Chance

Eager for a college education qualifying him for work as an electrical engineer or an accountant, Herman C. Gray, 39, has enrolled in Riley Junior High School at Logansport, Ind., as a student. Gray is a Logansport yard conductor for the Pennsylvania Railroad. He is assigned to the westbound hump crew tour, from 11 p.m. to 7 a.m. He goes to school from 8 a.m. to 4 p.m. He is taking a special course which will permit him to finish in less time than the four-year period.

Gray entered the service of the Logansport division as yard brakeman on Sept. 12, 1910, and was advanced to yard conductor on July 7, 1917.

Ten Pennsylvania Railroad employes at Columbus, O., are combining work and study these days by enrolling for evening classes at the Y.M.C.A. school of the city.

The law, accounting, engineering, and several other subjects are being studied by three young men who are workers in the machine shops, car shop and in other departments.

The Columbus Y.M.C.A. school provides an opportunity for young men in railroad work to obtain a college education.

P & A Photo

Looking East, Down Wacker Drive, Along the Shores of the Classic Chicago River Which, Although Not So Wide as the Mississippi is Twice As Thick.

The Railroad Diplomat

Diplomacy is a prime qualification of any railroad man whose work brings him into contact with the public, and we are glad to know that we have many employes who possess and use this qualification to good advantage, says the New Haven employes' magazine, Along the Line.

R. J. Bennett, assistant general manager of the Connecticut Company, while traveling on the Gilt Edge from New York to New Haven recently, observed an incident which showed that the conductor on that train is a member of our "diplomatic corps."

The car in which Mr. Bennett was riding was one of the "sample" cars with the new type of upholstery. "There sat opposite me," says Mr. Bennett, "a man and woman. The man turned over the seat ahead and put his feet on the upholstery." And Mr. Bennett adds ironically, "Probably he does this at home."

Invest in Yourself

Invest in yourself! It will bring the biggest returns, not only in money, but in satisfaction and happiness as well. Henry Ford once said: "I think that much of the advice given to young men about saving money is wrong. I never saved a cent until I was 40 years old. I invested in myself—in study, in mastering my tools, in preparation. Many a man who is putting a few dollars a week into the bank would do much better to put it into himself."

Efficiency

It seems that one of the employes dreamed that the boss died. He dreamed that he saw the black casket being borne away by six old and faithful employes. As the casket came near the boss raised up, looked around and offered a suggestion:

"If you would put rollers under this casket, you could lay off five men."—*Sour Owl.*

The Paintin' of the Green

By Robert C. Shimmin

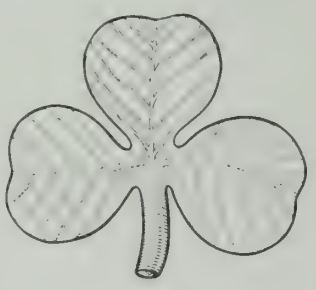
"MR. O'HARA, are the new street cars ready for paintin' yet?"

"Not yet, Mr. Greene. I had the foreman on the line yesterday. They will be ready about March 15 or 17."

"Oh, in about a week, eh? Had you thought of any particular color, Mr. O'Hara?"

"Well, sir, I had thought that green would be a very nice color."

"Green, green!" roared Mr. Greene. "Certainly not, any color but that. Don't ever mention green to me."



"Very good, Mr. Greene. By the way, Mr. Greene, had *you* decided on any color?"

"Well, yes, partly. To tell the truth I had almost decided on orange."

"Orange! Why spoil the cars by putting that on them, Mr. Greene? Real Irish gentlemen don't wish to be reminded of the Battle of the Boyne every time they step on the street car. Painting them orange would be an outrage."

"Mr. O'Hara, a real Irish gentleman would be flattered to have the street cars of his town painted orange; it is only the other kind that would have any unpleasant recollections. However, when the foreman rings about the color tell him to see me."

Mr. O'Hara, assistant superintendent of the Knoxton Street Railway Co., glanced at Major Greene, the superintendent, and left the office.

March 17 was a pleasant spring morning, the sun shone brightly, and Major Greene, following a custom of many years, strolled out into the balmy weather wearing a new necktie of brilliant orange. He felt it incumbent on him as superintendent of the local street car system to set a good example; he always rode downtown in a street car. At the corner of his street he waited, jauntily swinging his cane, inhaling the gentle balminess of the morning. He heard the rumble of a car as it turned the corner, but when he saw it, he almost screamed. It was one of the new cars painted a brilliant, vivid, green! The morning had lost its balminess for Major Greene, but his temperature would have made Phoenix, Ariz., look like the North Pole. He swung aboard the car with eyes averted from the odious color and rushed forward to the motorman.

"Get downtown with as much celerity as possible, O'Connor," said the major. "Never mind making any more stops. Pass up the mayor, the chief of police, the district attorney, the President of the United States, but get me downtown."

Passengers thought the motorman had lost control; waiting travelers are not sure yet whether a street car ever passed them; there was a green flash, and then just the March morning.

The major swung off the car at the general offices of the Knoxton Street Railway Co. and beat the elevator up the stairs by one floor. He threw the door of his office open, he slammed open the door of an inner office where Assistant Superintendent O'Hara was busy on the morning mail.

"So," he said, shortly. "So."

As a matter of fact it was all he could say as he glanced at his subordinate, the natty new tie of brilliant green, and the little three-leaved Shamrock nestling in his lapel.

"So, Mr. O'Hara. You disobeyed my orders."

Mr. O'Hara looked up innocently, surprised, astonished.

"Disobeyed your orders, Major Greene? Why, how?"

"You remember our discussion regarding the painting of the new street cars?"

"Yes, sir."

"And why did you go contrary to my wishes?"

"Contrary to your wishes, sir; why such a thing never entered my mind. When Foreman McGinty rang up and asked what color to paint the cars, why I told him 'Sea Green.'"

Keep the Change

The United States Daily printed this story one day in November marked "Advertisement." We're printing it free:

"Never was a northern dog any good for birds," said the baggage man, shaking his head at the fine setter lying in the corner of the car. The traveler protested from his seat on the trunk.

"Hear what he's saying about you, Jim, old man?" he said to the dog. The setter got up, wagging his tail. "You could show him, couldn't you?" The setter smiled, a dog smile.

"Well, perhaps we'll see," remarked the baggage man, pulling the signal cord. The train stopped. A parley with the enginemen followed.

"Ready to start?" he asked the baggage man. "Guess this is as good a bit of bird country as I know."

The astonished northerner loosed his setter and picked up his gun. Baggage man and engineman took theirs from a corner of the car.

It was a good hour's sport. Jim worked the new country perfectly, spotted the birds, pointed. The three impromptu huntsmen made an excellent bag. As they returned to the train, the traveler looked at the passengers. A few watched the dog with interest. Most were reading their papers or sleeping. The train started off again.

"Guess I'll have to take back what I said about northern dogs," the baggage man allowed. "That Jim of yours is a good one. Perhaps southern air agrees with him."

This episode took place over 30 years ago. It could not happen today. Schedules must be maintained especially on such a road as the Pennsylvania, operating 6,700 trains a day.

But the Pennsylvania, none the less, provides good service to sportsmen. Its lines run through fine hunting country and its employes, many of them keen sportsmen themselves, take a kind and lively interest in the dogs they transport.

Did He Study in Wall Street?

L. D. Stockton, 27, of Chicago and other places, does little things in a big way. He strolled up to a ticket agent at Memphis, the police charge, got two blank checks from him, borrowed his fountain pen, cashed the checks for $50 and bought one ticket to Little Rock and another to Nashville. Then he walked off with the fountain pen after bumming a cigarette and a match.

A few days later the checks came bouncing back. Then came a request for a refund on the two tickets.

The efficient Mr. Stockton was found in Hot Springs, returned to Memphis and held in jail.

"Human nature being what it is, dramatic critics will always do their worst."—*George Bernard Shaw.*

Books must follow sciences, and sciences books.—*Bacon.*

The Future of Air Express

By Harry H. Blee

Director, Aeronautics Dev.
U. S. Dept. of Commerce

The Journey's End. Grand Central Airport, Glendale, (Los Angeles.)

SINCE TIME immemorial, transportation has been a vital economic necessity. We are all dependent upon it every day in the year for the food we eat, the clothes we wear, the newspapers we read, and hundreds of other things that enter into our daily lives. Everything we buy must be moved, must be transported, from the point of its production to the point of its consumption or use.

Because improved transportation is a need of every private and corporate enterprise, every commercially sound transportation medium devised by man has enjoyed steady evolution and growth. Because civilization has always advanced hand in hand with the development of transportation, American genius has always concerned itself with the problems of improving transportation facilities. Every reader of this magazine is particularly interested in all developments relating to the transportation of men, mail, money and merchandise.

Today, a new transportation medium is looming up on the horizon of the nation's business. Today, we are witnessing the beginning of a new era of communication and transportation, an era which undoubtedly will be marked by a rapidly increasing use of air transport.

Written especially for *Transportation.*

For ten years now, aircraft has demonstrated its utility in moving the mail. During the last two years marked progress has been made in scheduled air passenger transportation. In the past, however, the amount of aerial express handled has been almost negligible. Yet air express offers an exceptional opportunity for extensive development.

Some conception of the express transportation field may be had from the fact that the Railway Express Agency, Incorporated (which is said to do about 80 per cent of the nation's total express business) handled, in 1928, 178,447,912 shipments, and transported a total of 12,134,458,016 pounds of express. Moreover, it is said that $25,000,000 worth of "small" merchandise leaves New York City alone every day, by express instead of by freight, and that one express company now fills 500 railway express cars every night in New York, incidentally handling in its 28,500 offices throughout the nation approximately 1,000,000 express packages daily. It is true that aircraft and airways are beginning to be used in connection with the transportation of express; that 30 or more air lines are now handling express; that 82 cities in the United States are now directly served by air transport routes. As yet, however, we have not even scratched the surface of aviation's express possibilities.

According to Robert E. M. Cowie, president of the Railway Express Agency, Inc., an unquestioned authority who has been in the express business for more than 48 years, we must stop marveling at the little romance of stunt commerce, and open our eyes to the colossal drama of American business which is so big that most of us cannot see it.

"We are interested in commercial aviation not only as a potential source of profit in itself, but for the influence it will have in promoting the expansion of our rail business by opening new markets to all lines of commercial enterprise," Mr. Cowie says. "What we need is planes in regular service with capacity of 20,000 pounds and the ability to carry a payload of at least five tons. When our air lines are equipped with such units, commercial aviation will follow the course of every other transportation system. That is to say, the profits from the low volume emergency traffic, including the paper work of business which can pay almost any price, will shrink into insignificance in comparison with those to be obtained from the regular and constantly increasing flow of routine merchandise."

Quite obviously, President Cowie realizes that just as millions of shipments are made by rail express because it is three times faster than freight, so will an increasing volume of tomorrow's shipments go by air express, which is three times faster than rail express.

Another authority, General John

F. O'Ryan, president of the Colonial Air Transport, says: "Almost from the beginning of my interest in commercial aviation I came to believe that within a reasonable period of time the poundage of air express would exceed the weight of passengers carried. At present, of course, this is not the situation. The important point to bear in mind is that with any kind of a reasonable tariff for air express the profit to the air carrier will be greater with a given weight than the return from carrying passengers.

"Moreover," he continues, "the air express package is inanimate and inarticulate, and the liability for its damage or loss is comparatively low. The package requires no attendant service. In the case of the passenger, special employes not required by the air express are necessary. The contingent damage by injury to, or loss of, the passenger, is comparatively greater. The hazard is greater. Many other comments might be made in this general connection; but the point is that air express is a promising field for development."

That this field is promising, and its future development inevitable, is further attested by the fact that valuable merchandise worth many millions of dollars always is in transit, and every hour cut from this transit time represents a distinct saving.

It is significant to note that in 1928 air express lines in Germany transported more than 2,200,000 pounds of freight, not including mail or printed matter. Germany's air freight service is used to transport many forms of commodities and is proving a valuable boon to many German industries. It is used not only for the transportation of machinery parts, flowers and perishable goods, but also for moving picture films, medicines, sample goods, and various other types of merchandise.

Customers of the Luft Hansa air transport company have found that fragile merchandise can be transported much more safely by airplane than by rail, because vibration and rough handling are virtually eliminated. Another important factor is the elimination of heavy crating and packing material, which greatly reduces the weight of the article, and therefore the tariff to be paid on it is appreciably lowered. As the result of an agreement entered into recently between this company and the German Imperial Railways, freight can now be sent to any place in Germany where there is a railway station, through the combined cooperation of air and rail transportation.

Winslow, Ariz., Airport Station.

In the United States many specific instances might be cited showing the use of air express. Business firms are sending not only light and comparatively small commodities by air, but also in some cases heavy and bulky shipments. Machinery and machine parts, dies, builders' hardware, fruits, vegetables, cut flowers, dry goods, millinery, newspapers, jewelry, advertising cuts and mats, currency and bullion, motion picture films, plans and specifications for building projects, all form parts of the cargoes which are now being flown over our daily air express routes.

Air Station at Albuquerque, N. M.

On European air lines the transportation of jewels, securities and other valuable cargoes by air is by no means new. Recently, however, Imperial Airways established a record for carrying bullion by airplane when, in a single nine-day period, 40 tons of gold bullion were transported across the English Channel from London to Paris, the air express shipments totaling $25,000,000.

The United States is far ahead of any nation in Europe or elsewhere in the total mileage of scheduled air lines in operation and in the number of miles flown at night. Today, we find numerous instances of the uses of air express in America. Six special refrigerator planes, for example, are being used to fly fresh fish from the Gulf of Mexico to a Texas city, where they are packed for shipment to northern cities, the planes carrying about 3,000 pounds of fish packed in dry ice during the air trip.

During the past three years, in fact, American air lines have transported 5,844,826 pounds of air express; and already a number of operators are planning their schedules so carefully that they are able to give equally good express service in both directions.

In addition to the regular commercial use of air express, there are countless cases of emergency uses. For instance, an important repair part for a water plant in California was recently forwarded from Ohio. This was handled by air express from Cleveland to San Francisco, with a resultant saving of three days which in turn saved the water supply of the community before the reservoir's reserve was exhausted.

General traffic of almost every type can be sent by air express, but present shipments are usually limited to those whose value does not exceed $5,000, including money and securities. Single pieces may be shipped which do not weigh over 200 pounds; perishables packed and of a character that will cause no damage to other shipments; and scores of other miscellaneous types of merchandise when packed, marked and labeled according to express regulations.

The Railway Express Agency, Incorporated, will now accept for air transportation wearing apparel, mercantile commodities, sporting goods, retailers' supplies, small machine parts and a host of other things, but will not as yet carry live shipments of any kind, explosives or highly inflammable matter, nor articles which are extremely fragile. This company specifies that unless special arrangements are made in advance, no single

Waynoka, Okla.

piece should be more than 60 inches long or more than 19 inches wide; that if over 40 inches long, the depth should not exceed 4 inches; and that the combined length and girth of an express shipment should not exceed 106 inches.

The air express service of the United States is now being operated only on certain designated airways; but it is available to all shippers who find that time can be saved or particular interests served by using air transport for all or part of the travel of their shipments. Direct air express service is now available between Boston, New York and Los Angeles, San Francisco and intermediate airports, making possible late next-afternoon delivery from New York to Pacific Coast points. It is also available between Washington, Pittsburgh, Cleveland, Cincinnati, Detroit, St. Louis, Tulsa, Dallas, Minneapolis, St. Paul, Lincoln, Pueblo and intermediate points; and between Los Angeles, Albuquerque, Wichita, Kansas City and intermediate points.

Our regularly scheduled transport planes are now flying more than 90,000 miles a day, the equivalent of more than 100 trips entirely around the world every month in the year! Already we have nearly 15,000 miles of airways equipped in whole or in part with aids to air navigation, such as intermediate landing fields, beacon lights, radio communication and radio range beacons, teletype installation, and weather service. It cannot be denied that the foundation is well laid for a thoroughly organized, nation-wide air express service; and its further development in the early future is inevitable.

Rules For Air Safety

A standard of minimum requirements, drawn up to provide for the present increased growth and expansion of passenger air transportation and applicable to operators carrying passengers for hire on scheduled services over fixed routes, will be placed in effect as soon as conditions will permit, Clarence M. Young, assistant secretary of commerce for aeronautics, has announced.

"The requirements are being prepared with the cooperation of the air transport organizations," Mr. Young said, "and include complete radio equipment to insure two-way communication between aircraft in flight and stations on the ground and adequate ground organizations and facilities for the proper handling, maintenance and operation of the aircraft. This contemplated action by the department is another step in the orderly progress and development of air transportation and air commerce.

"Under the provisions of the Air Commerce Act of 1926, the aeronautics branch of the department has established two fundamental requirements to insure the maximum degree of safety and reliability in air transportation. They are:

"First: Airworthy aircraft operated and maintained by competent airmen.

"Second: Development of airways equipped with aids to air navigation for day and night operations, including boundary-lighted intermediate fields, beacon lights, weather service, frequent radio broadcasts of complete weather information; two-way radio communication with planes in flight and radio range beacons for guiding aircraft through fog, storm or other conditions of poor visibility.

"To these two requirements there now is added a third which, in addition to licensed aircraft and airmen, requires a full utilization of the air navigation facilities and specifies that all aircraft engaged in carrying passengers for hire on scheduled interstate service, shall be operated over fixed routes provided with these aids to air navigation, and that the aircraft engaged in such operations shall be equipped to take full advantage of these aids.

"Experience has shown us that our objectives can best be accomplished through the promulgation of suitable regulations which, through their flexibility, may readily be kept abreast of the rapid progress of aeronautics, rather than by legislation which requires action by congress to meet conditions as they arise."

Passenger Station at Wichita, Kan., Airport.

Clovis, N. M.

Ability without enthusiasm—and you have a rifle without a bullet.—*Lord Dewar.*

An Automotive Record in 1929

Cars and Trucks Valued at Nearly 3½ Billions Placed on the Market

By W. J. Kennedy

THE LARGEST production in the automotive industry of the United States was recorded in 1929, when 5,651,000 cars and trucks, having a wholesale value of $3,483,900,000, were placed on the market, according to statistics compiled by non-governmental agencies not long ago, and released by the automotive division of the department of commerce. These figures compare with a total production of 4,601,130 units in 1928, having a wholesale value of $3,162,798,880.

During 1929, the motorist paid an average of $812 for his car, while the average retail price of trucks amounted to $877. The automotive industry also proved to be one of the largest employers of labor, using, in 1929, 4,300,000 workers either directly or in allied lines.

Besides a record year in the production of machines, the industry manufactured parts and accessories for replacement as well as service equipment, with a wholesale value of $920,000,000, and turned out rubber tires for replacement worth $600,000,000.

World registration of motor vehicles at the close of 1929 reached 34,700,000, of which 26,700,000, or 76 per cent, were registered in the United States. The world registration in 1928 was 31,778,203, of which 24,493,124 were registered within the United States.

According to the figures, the motoring public paid a total of $925,000,000 in taxes on motor vehicles. Included in the levy was $415,000,000 on gasoline consumption. During the previous year the total taxation amounted to $807,887,967, including $304,871,766 on gasoline consumption

An unprecedented record was established in export business also. It was stated that 1,015,000 American-made automobiles were sold outside of the United States last year and they, with accessories and tires, had a value of $757,400,000.

In 1929, only 710 vehicles were imported into the United States. The increase in foreign sales over 1928 totaled 23 per cent, and consisted of 18 per cent of the domestic production.

The automobile industry and the motoring public consumed 297,000,000 barrels of gasoline for the year. This represents 80 per cent of the total gasoline consumed in all industries.

Sixty-seven per cent of all plate glass produced was consumed in the production of cars. Nineteen per cent of the iron and steel produced, 15 per cent of the copper, 18 per cent of the lumber and hardwood, and 27 per cent of the lead went into the manufacture of automobiles.

Crude rubber used by the motor industry aggregated 913,920,000 pounds. Cotton fabrics used in tires totaled 287,000,000 pounds.

Highway improvement work in 1929 brought the total of surfaced highway in the United States to 660,000 miles. The total miles of highway of all kinds aggregate 3,016,281. Street and highway expenditures in 1929 totaled $2,000,000,000.

The number of consolidated schools using motor transportation was 16,500. These schools used 43,000 buses. Street railways employed 11,500 buses, and steam railroads used 1,900. Seven thousand motor trucks were used by railroads as a part of their shipping service.

Added impetus given to automobile financing during November, which brought the number of cars financed and the money advanced to a higher figure than that of the same month in 1928, caused the aggregate gain for the five months, from July to December, to be almost 50 per cent above that for the corresponding period of the preceding year, according to information made available Jan. 13 by the bureau of the census, department of commerce. These data are based on reports from 303 identical concerns.

The largest gain shown, both in money advanced and the number of cars financed, was in the new cars, though for November these gains were larger in the used car division. The reports on these figures are available only from July, 1928, and for this reason the comparison of the five months is used.

During the five-month period of 1929, there were 1,378,418 cars financed, representing an advancement of $634,238,169, and for the same time in the preceding year, there were 995,189 cars financed with a volume in value of $482,115,796, it was stated. The number of cars financed by 407 organizations during the 11 months of 1929, of which there are no

Trucks Have Proved Themselves Useful in Many Ways. Here Is an Example.

available comparative figures for 1928, was 3,246,211, representing a value of $1,506,009,910.

The value of the new cars financed during the five months in 1929 was $436,260,741, advanced on 735,978 cars, compared to $320,838,056 representing 509,744 cars for the corresponding months of 1928. The comparison of used cars for the period in 1929 was 623,236 cars representing an advancement of $189,808,569 and for the preceding year, 419,507 cars having a value of $127,541,149.

The number of cars financed in November of last year by these 303 identical concerns was 192,415 cars representing $85,326,739 and for the same month of the preceding year, 158,639 cars valued at $73,577,231. There was an increase of a little more than 14,000 in the number of new cars, representing an increase of about $7,500,000 while the number of used cars financed for November, 1928, increased from 68,951 acrs valued at $20,869,522 to 96,904 cars, valued at $29,678,629 for the same month of last year.

An Electric Train on the Lotschberg Railway Passing Over One of the Many Imposing Viaducts on This Line. This One Is Near Frutigen, Bernese Oberland, Switzerland.

Examination of Pilots

Approximately 775 medical examiners throughout the United States, whose duty it is to examine pilots and student pilots as to their physical and mental fitness for flying before they are licensed, and to check those who are already licensed, by periodic examinations, are maintained by the aeronautics branch of the department of commerce. The number of physical examinations conducted by these official medical examiners and certified by the aeronautics branch is growing rapidly, having increased from 11,688 in 1927-28 to 28,153 in 1928-29. Dr. L. H. Bauer, chief of the medical section of the aeronautics branch, predicts that during 1929-30 the number of physical examinations for pilots will increase to more than 50,000.

The department of commerce has fixed the medical fee for original examinations for transport, limited commercial, and industrial pilots at $15; for original examinations of private and student pilots, $10; all examinations of whatever class, $10; and the mid-year checks of transport and limited commercial pilots, $5. These fees are payable to the medical examiners who conduct the physical examinations. The aeronautics branch of the department of commerce makes no charge for pilots' licenses.

A Wooden Structure on the Cowlitz, Chehalis & Cascade Extension, An Important Lumber Line in the State of Washington.

Another Air Line Speed Record

Chicago to Cleveland in an hour and a half. The record was set Dec. 30 by a trimotored Fokker plane on the Universal Air Line, traveling at an average of 203 miles an hour, carrying 12 passengers and two pilots.

Pilots Ray Fortner and Garnett Caldwell left the Municipal Airport at 4 p. m. and dropped down on the Cleveland Airport, 326 miles away at 5:37 p. m.

How Railroads Are Saved

The Northern Pacific Railway reports that it used 42 tons of salt in 1929 for thawing snow and ice at switches and five tons went into making brine in heater pipes in passenger cars. The road used 333 tons of salt for refrigeration purposes and 710 tons for water softening purposes. Altogether the Northern Pacific used 1,090 tons of salt for these purposes last year.

EDISON and his STORAGE BATTERY

Eighth of a Series of Historical Sketches Presenting the More Significant of Mr. Edison's Series of Experiments from 1898 to 1908 in His Search for a Dependable, Economical Storage Battery

(Reprints of previous issues will be mailed on request)

Edison Formulates Sales Policies

UNLIKE some of Mr. Edison's other inventions, such as the incandescent lamp, that are today manufactured and sold by others, his storage battery has always been manufactured and sold by his own organization, the Edison Storage Battery Company, which is a part of Thomas A. Edison, Incorporated.

Although Mr. Edison is perhaps less well-known as a sales director than as an inventor, he has personally formulated many of the policies under which Edison Batteries are sold. One of these policies, of considerable importance to railroads, is the guaranty.

Mr. Edison was the originator of the practice of selling car lighting storage batteries with a definite guaranty as to life and capacity which provided that, in case batteries failed to operate as specified, the user would receive an adjustment.

Mr. Edison maintained from the beginning, however, that his guaranty would prove valuable to customers almost in exact proportion as the performance of his battery made it unnecessary. The assurance that the battery would actually live up to the guaranteed standards of performance was of far greater importance, he believed, than the adjustment promised in case it did not.

This has since been well substantiated in railway car lighting battery service. If a storage battery unexpectedly fails in such service, the railroad suffers inconvenience as well as numerous expenses incidental to replacing a battery in the car, even though the battery manufacturer makes an adjustment.

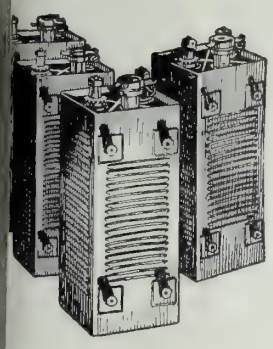
He insisted, therefore, that guarantees should promise no more than the batteries could actually deliver. The first Edison Batteries sold for railway car lighting service were guaranteed for three years. It was only as Mr. Edison received proof that actual life averaged longer that he permitted the guaranty to be raised to five years, then to ten years, and finally to sixteen years as at present.

In 1928, an audit was made of the cells sold to two important railroads during 1913 and 1914 when the three-year guaranty was in force, and it was found that 66 per cent of the cells were still in service at the average age of 14½ years.

TRADE MARK Thomas A Edison

Edison *Steel Alkaline* Batteries give Economy ar
Control, Gas-Electric Rail Car, Signalin

EDISON STORAGE BATTERY COMPANY, ORANGE



THIS letter is being mailed to more than thirty American railroads appearing on our records as purchasers of Edison Batteries prior to 1913. All of these roads have continued as purchasers ever since; and a majority of their first Edison Batteries are known to be still in service.

The letter is reproduced here as a means of reaching the attention of any other roads that may not have received it because of possible incompleteness of our records.

Cable Address "Edison, New York"

From the Laboratory of
Thomas A. Edison,
Orange, N.J.

February 17, 1930

[illegible] Mechanical Superintendent
[illegible] Company
New York, N. Y.

Dear Sir:

Mr. Edison, just prior to leaving on his annual trip to Florida, expressed a desire to obtain for test and for use in his collection the oldest Edison Storage Battery that remains in railway service as of December 31, 1929.

To whatever railroad may have it, he has authorized us to offer a new Edison Battery of like kind in exchange.

We are sending this letter to the mechanical superintendents of all railroads that purchased batteries during 1908, 1909, 1910, 1911 and 1912. Your co-operation will be deeply appreciated if you will advise us the oldest remaining in service on your road.

Prior to 1913, serial numbers were not followed by a serial letter as in subsequent years. Therefore, cells bearing numbers not followed by serial letters were manufactured during the years 1908 to 1912; and the oldest of your Edison Batteries in which we are interested is the one containing lowest numbers.

Mr. Edison's interest in the matter arose from the fact that when a 17 year old Edison Battery, still of 100% capacity, was exhibited last fall during the convention of the Association of Railway Electrical Engineers, railroad men who saw it remarked that they knew of numerous older Edison Batteries that are still in service.

We sincerely hope that you will be sufficiently interested in Mr. Edison's offer to co-operate in this undertaking. If there is any further information that would be helpful to you, Mr. J. L. Hays, Manager, Railroad Department, Edison Storage Battery Company, will be only too glad to furnish it.

Yours very truly,

Wm. H. Meadowcroft

Assistant to Mr. T. A. Edison

ependability in Car Lighting, Multiple Unit
otive Power and Other Railway Services.

TRADE MARK
Thomas A Edison

J. , , , BRANCHES IN PRINCIPAL CITIES

The Engineers At Chicago

(Continued from Page 10)

nal men in other, and executive, departments of the railroads.

In his yearly report, following, Mr. Lewis stressed the fact that the work of the signalmen had changed, that not only traffic requirements had become duties but that the signalmen are confronted with the protection of the traveler on the public highway. He urged a campaign of education in safety and uniform markings and safety devices for all lines.

Secretary Balliett reported that the membership of the Signal Section is now 2572, a net increase of 162 members over last year. He said that 94 committee meetings were held during the year.

The committee reports were many and learned, including Signaling Practice, W. M. Post, chairman; Overhead and Underground Lines, G. H. Dryden, chairman; A-C. Block Signaling, W. F. Follett, chairman; D. C. Blocking, E. N. Fox, chairman; Standard Designs, H. G. Morgan, chairman; Economics of Signaling, J. E. Saunders, chairman, and others.

The new officers for the year are:

President, P. M. Gault, signal engr. M. P. of St. Louis.

First vice president, A. H. Rice, supt. of tel. and signals, Delaware & Hudson.

Second vice president, H. H. Orr, supt. tele. and signals, C. & E. I., Chicago.

Secretary, re-elected, H. S. Balliet, New York Central Lines.

Directors:

G. H. Caley, electrical and signal engr., N. Y. O. & W., Middletown, N. Y.; H. J. Foale, signal engineer, Wabash, Decatur, Ill.; W. N. Spangler, assistant superintendent telegraph and signals, P. R. R., Philadelphia, Pa.; H. W. Lewis, signal engineer, L. V., Bethlehem, Pa.; W. E. Boland, signal engineer, S. P., San Francisco; W. F. Follett, assistant signal engineer, N. Y., N. H. & H., New Haven; A. B. Himes, first assistant signal engineer, B. & O., Baltimore; C. F. Stoltz, signal engineer, C. C. C. & St. L., Cincinnati; F. J. Ackerman, signal engineer, K. C. T., Kansas City, Mo.; R. B. Elsworth, assistant signal engineer, N. Y. C., Albany; W. F. Zane, signal engineer, C. B. & Q., Chicago; C. H. Tillett, signal engineer, C. N., Toronto, Ont.

If It Had Been a Conductor

Al Lester, a railroad engineer, has reason to believe that organized bandits of Chicago are celebrating "be good to victims' week." Lester was one of the 15 men held up one night in December by a trio of robbers, but all the cash he had with him was 18 cents.

"Boys," said the leader of the bandit gang, "this is pitiful. This fellow has only 18 cents and there may be little ones at home waiting for papa to bring them some candy."

He turned to Lester and said: "My dear fellow, you have our sympathy. Take this $5 bill and beat it."

On the Cover

PERHAPS you remember the time when you used to forget about cutting the kindling, or doing some other entirely unnecessary task such as fathers and mothers continue to this day to assign to their helpless children—always the boys. If you did live through such tragedies doubtless you will feel a kindly glow come over you for the boy in the picture on the cover this month. He has a mouth organ, the chief joy of boyhood next to the frowsy dog that all real boys have or should have, and he is making up his mind, doubtless, that when he has come to maturity he'll be an engineer.

The picture is a reproduction from one of several shown by G. H. Coster, last summer, in the photographic exhibition of the Baltimore & Ohio at Baltimore, and is done in copper half-tone through arrangement with that road. It received honorable mention in the exhibition, but as an influence in taking one back across the years to days many of us would like to live again the picture is entitled to first prize.

Big Construction in Italy

The Apennine Tunnel on the direct Florence - Bologna Railway route (Italy) was competed December 4, thus technically completing the new railway line. This tunnel is 11 miles in length and is the second longest tunnel on the continent, being exceeded in length only by the Simplon tunnel. The new railway line was projected in 1908 when it became evident that the single track system linking Florence and Bologna by way of Porretta was inadequate for traffic needs. Some work was initiated soon after, but this was halted by the war. It was not until 1923 that actual construction work began. It is believed, however, that the new line will not be opened to traffic before 1932 as there are many minor details yet to be completed.

From an engineering point of view the importance of this new line is shown by the fact that it comprises 38 bridges and culverts having a total distance of 3,992 meters (4,366 yards) and 31 tunnels with a combined distance of 36,737 meters (40,176 yards), which is approximately 45 per cent of the entire line. Rails weighing 50 kilos (110 lbs.) per meter will be used and traction will be by electricity. The cost to date for the grading leading to the entry of the great tunnel is 398,000,000 lire ($20,947,368) and it is estimated that another 42,000,000 lire ($2,210,526) will be required to complete the work so that the grades which have a combined length of 64,400 meters (70,429 yards) will have cost on an average of 7,000,000 lire ($36,842) per kilometer when completed. The entire cost of the line is about 1,150,000,000 lire ($60,500,000).

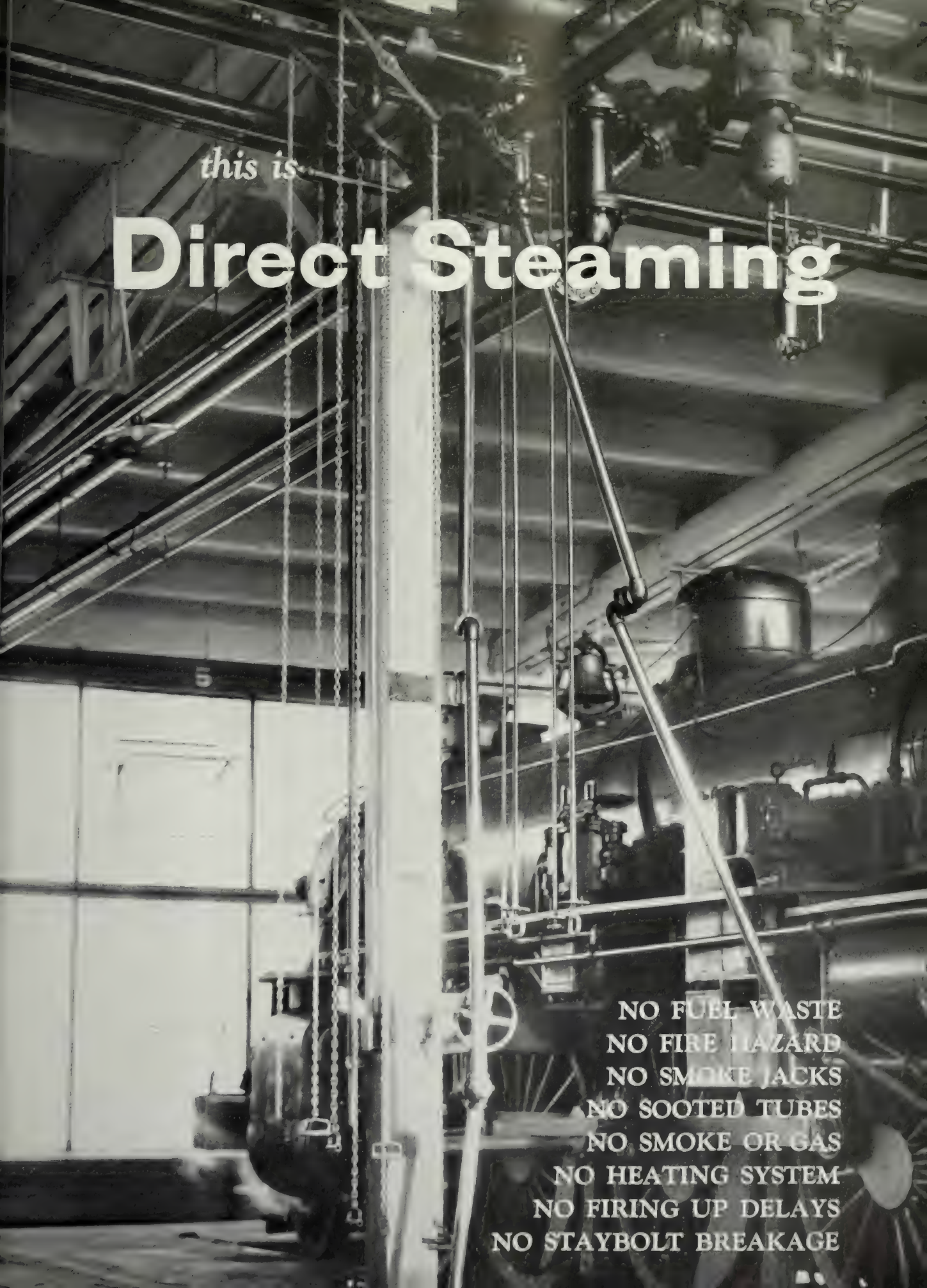
Employer Not Liable

In an action under the Federal Employers' Liability Act, evidence showing that an accident, by which an employe met his death, may have resulted from any one of several causes, for some of which the railroad was responsible, and for some of which it was not, is insufficient to prove that the accident was proximately due to the negligence of the employer, the Supreme Court of the United States has held.

In the particular case before it, the court ruled that the plaintiff had failed to bear the burden of proof requiring him, in order to succeed, to show that the accident was due to the negligence of the employer. The opinion states that there was no evidence to show how the covers of a bin in a grain elevator, in which the deceased had been employed at the time of his death, had been removed, or the circumstances under which the deceased, who had been warned to keep away from the bin, entered it and thereby came to his death.

The verdict against the railroad was therefore held to rest upon speculation and conjecture, and the court reversed the judgment entered upon the verdict.

Of 278 accidents in Wisconsin in 1929 at railroad grade crossings, about 40 per cent were caused by motorists driving into the sides of trains. Approximately one-half of the accidents occurred at crossings where there was no obstruction to view.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Direct Steaming
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NO FIRING UP DELAYS
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AT DIRECT STEAMING TERMINALS ALL FIRES ARE IGNITED AT THIS FIRE LIGHTING STATION
AFTER LOCOMOTIVE LEAVES THE ENGINEHOUSE

SOME RAILROADS
HAVE BEEN QUICKER
THAN OTHERS TO FULLY
APPRECIATE THE ADVANTAGE
OF ELIMINATING SMOKE AND GAS
FROM ENGINEHOUSES, OMITTING
SMOKE JACKS AND THE HEATING
EQUIPMENT, PREVENTING FIRE HAZARD,
STOPPING STAYBOLT BREAKAGE,
TO SAY NOTHING OF SAVING
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Editorial Comment

Air Transport Tickets

THE AUTHORITIES having charge of the making of railroad tickets are about as far behind modern ideas of efficiency as the Arizona cliff-dwellers, if there are any. A man bought a ticket not long ago in New York for a journey into nearly all the states. It was more than seven feet long. It looked as simple as a general election ballot in New York or Chicago.

And now the air transport companies, influenced by the example of the railroad brethren have, through their national association, prepared tickets just about as cumbersome. At present there are three of the proposed air tickets, one of them three feet long.

One can travel all over Europe on a clip of tickets no larger than a loose-leaf book such as fits into one's coat pocket. But because everyone in this progressive country except the night watchman has to have a coupon off a through ticket, the passenger is compelled to go around with pockets bulging with perfectly superfluous paper—one coupon for the agent, one for every division, one for the bridge, one for the auditor of every road and so on over all the lines. One ticket, stamped by every conductor carrying a passenger over a railroad and sent by the last conductor to a clearing house which would give all lines the proper credit, would do the trick. You can pass a check for one dollar or a million through thirty banks without fuss and everyone gets his share. But just try the system on a passenger auditor. He'll tell you it can't be done because it never *has* been.

You Missed Your Chance, Mr. McGinnis

In the September number of this magazine this Editorial Comment appeared, with complimentary reference to the Southern Pacific's adoption of anti-actinic glass in ten lounge cars announcement of which had just come from F. S. McGinnis, passenger traffic manager for the company:

> The energetic Mr. McGinnis will have to contrive cars fitted with Frigidaire before we resume traveling in the summer. Seriously, the railroad that produces cars so equipped will cause a riot. Theaters are cooled. One-half of a baggage car would hold all the equipment needed to make passenger coaches habitable in the hottest months. Why not, Mr. McGinnis? That's what we want.

As we go to press with the present edition notification comes from the progressive Santa Fe System's passenger department that the suggestion has been adopted. This is what the astute W. J. Black, passenger traffic manager for the Santa Fe System, says:

> The Santa Fe has been experimenting for several years with the problem of keeping the air cool in club, dining and sleeping cars during the summer season, said Mr. Black, and for a starter a contract has been let for the early installation of reconditioned air, cooled by a patented process, on the dining cars of the Chief, our extra fare train.

The frigidaire truth of the matter is that a public speaker for the railroads was scolded roundly for making the suggestion about cooled air fully five years ago. But it doesn't matter. The cooled air is what we want. And, as we said in the editorial in September, the railroad with this comfort-giving facility in its cars will have the finest advertising material in existence.

Big Man From The South

The senate committee on interstate commerce came very near turning down the nomination of Hugh M. Tate of Tennessee to be a member of the Interstate Commerce Commission. Mr. Tate was suspected of knowing something about the railroad business. Not until he testified under oath that he had never, as a lawyer, tried a case for a power company or a railroad, even remotely savoring of the matter of rates; not until he swore that, to quote his own words, he had never represented a public service corporation, and that he "did not know the details of rate making and had never even studied the most recent and most important decisions affecting railroads;" not until Mr. Tate declared, vaguely, that he believed the matter of valuations might be clarified; not until he had in effect shown himself a perfect juror, did the committee approve a report favoring his nomination. And we continue to wonder why the Interstate Commerce Commission occasionally makes a mistake!

Humor of the Month

Henry Ford, master of dissimulation, student of American history, coinage, dietetics, and peace, has declared himself once more in favor of lower freight rates. It is several years since Mr. Ford first suggested such a thing. Persons, doubtless of low mentality expressed the belief at that time that it was just possible he was thinking of the charges on the motor cars his Detroit factory turned out, but of course this was a prejudiced viewpoint. In recent testimony before congress Mr. Ford went so far as to say the bank failures in Florida, last fall, probably were caused by high freight rates.

In this connection, a story used to be told about a carload of Fords smashed to pieces in a wreck on a railroad somewhere east of Chicago. Naturally a claim was made. The possible effect of so-called high rates on Mr. Ford's cars and the revenue he gets from their sale is emphasized by the snapper on the story which was to the effect that his company settled with the railroad for $240 for the whole carload. Of course the story referred to the old model. Doubtless the new and very handsome cars cost more to make; probably forty or fifty dollars.

Hope Commissioner Meyer Reads This

"Credit from reclaimed junk, $1,750,107," was one of the interesting notations in the yearly report of the St. Louis-San Francisco Railway for 1929. In a few words it told the story of one of the most remarkable industries operated by an American railway—the reclama-

tion plant at Springfield, Mo. During 1929 this plant reclaimed from scrap and junk gathered from all parts of the road's 6000 miles of track, enough usable material to total a million and three quarters cash. Part of the reclaimed junk, such as scrap brass and waste paper was sold. Other parts were converted into many materials and supplies which the railroad uses in its operations.

During the year 4,671 cars of scrap material were received at the plant, and of these, 2,855 car loads were reclaimed or converted into other material, and 1,816 were sold as scrap. For the scrap alone the road received more than a million dollars.

Radio Influence

It becomes more and more apparent, especially in view of the uses to which it was put in the most recent presidential campaign, that no other instrumentality for disseminating information can equal the radio. All the newspapers, the magazines and the corner-box orators in the nation put together cannot reach so large an audience. Whatever is permitted to be broadcast, therefore, should be as nearly authentic as constant watchfulness can make it.

What, for instance, may have been the effect when a speaker, a few nights ago, told an unknown number of listeners-in on a Los Angeles broadcast, that it was possible to make a shipment of goods to Shanghai from Los Angeles as cheaply as from Los Angeles to Bakersfield? The impression was, very plainly, that railroads are robbing shippers, and through them the consuming public.

The speaker neglected to say that the ship would move over a roadbed maintained without cost to anyone; that the ship owners paid no taxes on any of that roadbed; that their investment probably was not more than a few hundred thousand dollars; that several governments provided protection to ships using that ocean, and would see to it that such protection was maintained even to the extent of going to war; that the ship owners made their own rates. Indeed the speaker told nothing except what was certain to mislead those who heard him. We used to boast about the pure air of California, but think what it carries sometimes?

Claim Adjustments

Claim departments are doing much better now than for many years in settling the demands of shippers and others who declare themselves damaged through some failure in service. It is important that the improvement be maintained. One of the large shippers of fruit, a man who sends 100 to 150 cars a day out of California in the season, said not long ago that protracted negotiations with claim departments of certain railroads is the costliest item, eventually, charged against any line. Delayed payments of claims, obviously well justified, destroy all the good work done by public relations departments and committees. All the speeches and all the courtesy possible can not regain the lost friendship of a man who believes himself unfairly treated by the claim department of the company. Traffic is diverted to other lines for such reasons, and it never comes back. One southwestern line has lost many thousands of dollars—and doubtless it will lose millions—because of one unpaid claim amounting to a sum so small that the station agent had authority to pay it. There isn't a doubt in the minds of informed persons that railroads are imposed upon constantly through improper claims, but it might be wiser to settle than to lose the business of coming years. Sometimes — not always — but *some* times claim agents believe themselves ordained by Heaven and the general office to turn down the claims out of which they can squirm by hook or crook. That kind of agent ought to be fired.

Where Passenger Traffic Is Going

February 14, to use just one specific date, exactly 354 passengers landed at or left the airport at Tulsa, Okla. The air liners operating in that region only part of the year, carried more than 6,500 passengers in 1929, and their business is increasing rapidly by reason of lower rates. One air transport company in eastern states carried nearly 21,000 passengers last year. Tulsa is a wealthy city but there appear to be people elsewhere who have money and are willing to spend it for speed. More than 2,900,000 persons traveled by air in this country in 1929, and this means a good many dollars taken from railroads right in the beginning of the air transport industry's competition. Railroads, apparently, didn't become aware of the air service possibilities a moment too soon.

It was considered quite the thing, not so very many years ago, for railroad men to stick up their noses, speaking metaphorically of course, at automobiles and trucks which, it was believed, never would take anything much except the short-haul travelers; and by the time they discovered their bad manners it was too late. Railroad officials have been given rather lamentably to this attitude in respect to a good many advances, and the new generation knows it.

It was a struggling railroad, in a region much beset by hard luck in recent years, that assembled some startling figures on a certain Thursday, last month, where motorists from everywhere, determined to See America First, crossed the St. Johns River at Jacksonville, Fla. The count of cars and passengers was made by experts for the Florida East Coast Railroad, and the figures are illuminating and significant in their relation to the dwindling passenger business of the railroads of the country. Two-thirds of the automobiles and passengers counted came from "long haul zones!"

Consider these figures:

California, 125 cars, 304 passengers.
Illinois, 834, cars 2,308 passengers.
Indiana, 387 cars, 1,127 passengers.
Massachusetts, 553 cars, 1,435 passengers.
Michigan, 920 cars, 2,611 passengers.
New Jersey, 1,375 cars, 3,836 passengers.
New York, 3,208 cars, 8,601 passengers.
Ohio, 1,251 cars, 3,339 passengers.
Pennsylvania, 1,356 cars, 3,738 passengers.
Canada, 158 cars, 475 passengers.
Total, 10,465 cars, 27,716 passengers.

There wasn't a state in the union not represented in the tabulation . . and of course Canada was there "with bells on," so to speak, while Hawaii, too, was represented, and Mexico. . . . The total for the month was 15,610 cars, and 42,504 passengers! . . .

It doesn't matter why they go up there, but it is important to know that in 1929, 4,508,808 automobiles entered Canada from the United States. This was 863,353 more than in 1928. There were at least two persons in every one of those cars, and probably three or four, more than nine million passengers!

There doesn't seem to be anything much to do about

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Four years of successful service in main line by CONLEY TYPE SPRING FROGS have demonstrated their merit for safe and economical service.

SHOWING SPRING FROG IN SERVICE

CONLEY FROG & SWITCH CO.

Memphis, Tenn.

the situation. Railroad travel could scarcely be made more attractive. But there must be a lesson in it somewhere if it can just be found. Over in England the railways and the motor coach companies have kicked up quite a rumpus in their efforts to control passenger traffic. It is a battle that flares up every so often and then dies down, like the flames of a bellows. It has been somewhat dull since last August but right now, a correspondent in London says "the blighters are at it again."

The railroads have opened up along all fronts with an ultimatum prohibiting railroad tourist agencies throughout the country selling motor coach tickets, except those for agencies approved by the railroad companies.

The ultimatum, which would have a serious effect on the American tourist season next summer, is expected to be contested bitterly by the motor coach companies.

Agents do not believe that the railroads can benefit in any way by the prohibition since if the public wants to go by road instead of rail it will do so. And if the agents cannot or will not sell motor coach tickets, then the public will merely walk across the street to a purely coaching office.

Whereupon, of course, the English railroaders will step out quite blithely for a dish of tea and perhaps a crumpet or two.

Samuel M. Felton Passes

The public knows nothing, or at least very little about the burdens of executives responsible for the proper operating of great properties, their relationship with the supporting public, the handling of big financial problems. Complicated and wearying as are these duties they are simple and pleasant on railroads fortunately situated, smooth-running, profit-making, necessary railroads, in contrast with the same duties performed on a road which, economically, need never have been built. To lead such a property safely through the mazes of receivership back to interest-paying levels is a job to try the heart and soul of a man.

It has been said of Samuel M. Felton, who died a few days ago in Chicago, that throughout his long and interesting career he never had managed a first class railroad. The reason was that early in life he displayed rare ability in correcting other men's mistakes, in rescuing defunct or nearly-defunct properties from the courts, in bringing them back to the point of at least paying their interest on the bonded indebtedness. He was known the world over as a Doctor of Railroads, and deserved the title.

Mr. Felton's rather extraordinary *forte* for making good where other men had failed had been developed through years of strange experiences. His peculiar duties had shown him the weaknesses of men. He had, indeed, seen proof of so much genuine bone-headedness—there is no other word to express it—that he had small patience with men who displayed that trait. This impatience had caused some critics to declare him difficult to get along with; but this was shallow thinking of ignorant men. Sam Felton, as he was called by his near friends, had a gentle heart. Under the rather rough exterior, back of the brusque mannerisms and the oft-times chilly glance, there was a very kindly man, glad to help if help might be needed. It is a great testimonial to Mr. Felton's fine character that many of the leading men in transportation and finance, here and abroad, were his friends. He will be missed greatly.

The Consolidations Debate

Senator McKellar of Tennessee has introduced a bill to prevent consummation of the proposed consolidation of the Northern Pacific and the Great Northern Railway. Practically every important commercial and industrial organization in the Pacific Northwest has asked or is preparing to ask permission to intervene, the larger part of them being determined to prevent the combination. Governors of states, boards of public utilities and Big Business are writing and telegraphing against it. President Sargent of the Chicago & North Western seems to have been right in his declaration that the urge for consolidations no longer exists, nor does the necessity.

"The whole picture has changed," says John W. McCardle, chairman of the Indiana public service commission, writing in the United States Daily. "It is now nearly ten years since the Transportation Act was passed. In this period a more favorable attitude of the public, and the benefit of the other provisions of the Transportation Act, have enabled the railroads not only to get back to a normal condition, but to procure, at reasonable cost, the necessary funds to expand to meet the growing needs of the country.

"Today we have the most efficient transportation machine we have ever had in the history of the country. It is in its best physical condition, and is rendering a service that is satisfactory to its patrons."

In turning the railroads back to their owners after government operation, congress was confronted with the necessity of providing very substantial help in order to avoid a complete breakdown in transportation service. That condition has disappeared.

Finally, who is it that is demanding consolidations? Certainly not the public.

Help the Naval Observatory

The navy department has asked congress for a special appropriation of $265,000 to modernize the United States Naval Observatory at Washington. Every railroad man in the nation ought to do whatever he can to help this measure along to a favorable vote. The amount of money requested is picayunish in view of the great and important service the observatory gives the whole people. If you doubt this and care to inform yourself you ought to read the article in the World's Work for February describing the work done by the scientific gentlemen who need this money.

Every clock in America is dependent upon the three chronometers in glass cases hidden in an underground chamber beneath the observatory. The strangest part of the story, when one knows how our government splatters money around, lies in the fact that ever since the observatory was founded, and for many years previously, its friends have had to beg and fight to get a dollar for its support.

Dr. Orison Swett Marden used to say a man would remain a rag picker just as long as he had no other vision.

Improved transportation in Colombia is expected to be followed by the opening of many mines that heretofore could not be reached.

SELF-PROPELLED COMPRESSOR and "STRAIGHT BACK" TIE TAMPERS

On The Job

MANY railroads are using these units because of their convenience, speed and reliability. The standard CP Compressor is mounted on a truck frame carrying flanged wheels with Timken roller bearings, transverse shifting wheels and winch, air-operated lifting jacks, lifting bale and a roomy tool box. The gasoline engine that operates the compressor also propels the car at a speed of 12 to 18 miles per hour, depending upon its size. The compressor is furnished in sizes of 110, 160, 220, 265 and 310 cu. ft. per minute displacement. The CP Tie Tampers have several interesting features that are fully described in folder No. 1646. Details of the Self-Propelled Compressors are given in Bulletin No. 789.

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Railroad Department

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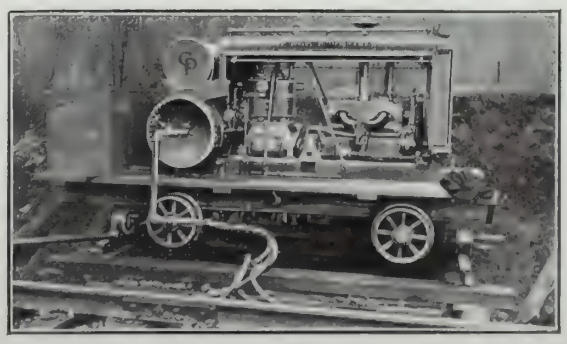


Samuel Felton's Long Career Ends

Widely Known "Doctor of Railroads" Succumbed March 11

By Charles Dillon

SAMUEL MORSE FELTON, chairman of the Chicago Great Western, died shortly before midnight March 11 at the Passavant Memorial Hospital, Chicago, at 77 years of age.

It is doubtful whether any railroad man in America ever was more widely known than Samuel Morse Felton or, in many ways, more misunderstood. Socially, he was a most charming companion, an interesting conversationalist in a time when conversation as a social accomplishment has fallen into what Cleveland called innocuous desuetude. After a journey with him in his business car, or an evening at the Chicago Club, one became convinced that he who did not know Samuel Felton socially did not know him at all.

Many years of the most irritating and exacting service as a nationally-known "Doctor of Railroads" had hardened Mr. Felton's exterior and given him an abruptness of manner, a high degree of impatience with incompetency in men which, except with those who knew him intimately, was a complete mask covering his natural kindliness. Like most men who have carried heavy responsibilities, he wanted things done right, and he wanted them done promptly, a fact which caused many to overlook his finer points one of the pleasantest of which was an astonishingly well-developed vein of humor.

Mr. Felton was born in Philadelphia in February, 1853, the son of Samuel Morse and Maria Low (Lippett) Felton. It was his father who, as president of the Philadelphia, Wilmington & Baltimore Railroad Co., had an important part in conducting President-elect Lincoln to Washington from Baltimore in the stirring days of '61 when many feared Lincoln might never be permitted to assume office. It was natural, therefore, that the boy should follow in the father's footsteps in choosing a career for himself.

Mr. Felton was educated in private schools in Philadelphia and at the Pennsylvania Military Academy, where he studied engineering. In 1868 he began his railway service as a rodman on the Chester Creek Railroad, now a part of the Pennsylvania. Meanwhile he entered the Massachusetts Institute of Technology, and following his graduation in 1873, became chief engineer of the Chester & Delaware River Railroad. When only 21 he was general superintendent of the Pittsburgh, Cincinnati & St. Louis from 1874 to 1881; of the Little Miami, and Cincinnati & Muskingum Valley railroads in 1881-82. At 29 he undertook the general managership of the New York & New England Railroad, an impaired line whose recovery under his direction (1882-84) demonstrated his capacity for rehabilitating dilapidated railway properties. The Erie Railroad then besought his services as assistant to the president, in special charge of a subsidiary, the New York, Pennsylvania & Ohio road, to which he also applied his reconstructive skill with equal success.

Samuel M. Felton

Following a brief period as general manager of that line came his appointment in 1885 as vice president of the Erie in charge of traffic. The next year he was advanced to vice president in charge of traffic and operation, and also of the company's coal properties and Great Lakes steamship lines. Late in 1890 he left the Erie to become president of the East Tennessee, Virginia & Georgia; Cincinnati, New Orleans & Texas Pacific and Alabama Great Southern Railroads. Remaining as head of the East Tennessee until 1892 and of the Alabama until 1895, he continued to direct the Cincinnati road as receiver from 1893, the railroad collapse in the South of that year having thrown that and a number of other systems into insolvency, and making his services more than ever in demand as a reorganizer. The depression lasted until 1899 and he restored the line to its owners, with its roadbed and equipment renewed and the company free from its burden of debt for the first time in years.

Mr. Felton became president of the Chicago & Alton system, which embraced the Joliet & Chicago, Kansas City, St. Louis & Chicago, and Louisiana and Missouri River lines. He undertook to rebuild the system, division by division, replacing old bridges with new, reducing grades, augmenting the equipment by 77 new locomotives and 4,000 modern cars, and by sound constructive work prepared for handling new traffic on a reconstructed line by reducing tonnage costs to make it profitable. In three years $12,000,000 was spent on bridges, rails, ballasting, signals, frogs and switches, side and double tracks, yards and enginehouses, and on the remodeling of shops and stations. As a consequence of its improved physical condition under his stimulus the Chicago & Alton raised its average of tons carried per train mile from 187 to 382 in four years.

Baker

Any business which uses human beings to do work that a machine could do, is unfairly limiting the productivity of those human beings *and the productivity of its own capital.*

Baker Industrial Truck Division
of THE BAKER-RAULANG COMPANY • 2180 West 25th St., Cleveland, Ohio.

Mr. Felton was president of the Mexican Central in 1908-9, and for a brief period in 1909 was also chairman of the board of the Tennessee Central. Since 1909 he had been a guiding factor in the development of the Chicago Great Western Railroad, first as president and after November, 1925, as chairman of the board.

During the World War Mr. Felton was consulting engineer and advisor to the U. S. chief of engineers, director-general of military railways, U. S. Army, and vice chairman of the U. S. Shipping Board's Port & Harbor Facilities Commission. He was also a director of the Chicago City & Connecting, Chicago City, Calumet & South Chicago, and the Southern Street Railways; Equitable Life Assurance Society; Electric Household Utilities Corpn.; Central Trust Company of Illinois, and Peoples Trust & Savings Bank. The only public office he ever held was that of commissioner of Lincoln Park, under appointment of Governor Lowden, a post he held for four years.

Mr. Felton's record as a construction president made him an outstanding figure among railroad chieftains of the West. He was president of the Western Railroad Association and chairman of the Western Association of Railway Executives, and the Chicago Presidents' Conference. He was a member of the American Society of Civil Engineers, Western Society of Civil Engineers, Society of American Military Engineers, the Franklin Institute, the Society of Colonial Wars, Sons of the Revolution, American Legion and World War Veterans. France made him an officer of the Legion of Honor, in recognition of his war work, and the United States Distinguished Service Medal was awarded him. His citation reads: "For especially meritorious and conspicuous service in the performance of duties of great responsibility as Director General of Military Railways, in supervising the supply of railway material and the organization of railway operation and construction troops, contributing materially to the success of the army in the field during the World War." Pennsylvania Military College conferred upon him the honorary degree of LL.D. in 1919, and Marietta College of Marietta, Ohio, conferred the same degree in 1926. His uncle, Cornelius Conway Felton, was president of Harvard College, and his mother was eighth in descent from Gov. Roger Williams who founded Providence Plantation. Mr. Felton married, October 21, 1880, Dorothea, daughter of George P. Hamilton, of Pittsburgh, Pa. They had four children, Hadassah, wife of Dr. Wm. C. Posey of Philadelphia; Ruth, wife of Dr. W. F. M. Sowers of Washington; Dorothy, wife of Hopewell L. Rogers of Chicago, and Samuel Morse Felton, Jr., of Philadelphia.

The Good Old Times

C. E. R.

Patrick A. Dennison, car repairman, Parkersburg, W. Va., who was presented recently a gold watch in recognition of more than 60 years service with the Baltimore & Ohio Railroad, recalls when cars had wooden couplers. He relates:

"Back in 1868," says Dennison, "when I went to work at the age of 14, passenger cars were connected with wooden couplers. Engines were coupled with gooseneck couplers, made half of wood and half of iron. The coupler on the engine tank was about three inches higher than the car coupler; the iron was bent to reach the coupler on the tank, and this caused the name, 'goose neck.'

"Cars were not equipped with air brakes or signals. There were no vestibules and no desk lights. Roofs were flat, and many cars contained two stoves, one at each end. Other cars had only one stove, which was placed in the middle, and the stoves were wood-burners. Some of the passenger cars had seats arranged with one back for two seats, passengers occupying one seat sitting back to back with those of the other."

And He Wore Cuffs

James Charles Cuff who, for almost half a century, has been a station agent of the Lackawanna Railroad, has retired with an unblemished and continuous-service record of 56½ years to his credit. Born in Gouldsboro, Pa., "Jim" Cuff first saw service as a water boy for the local section gang, subsequently mastered telegraphy, was appointed agent at Cohocton, N. Y., in 1892, and, for the past ten years, has been its popular and obliging agent, at Bath, N. Y. He was popular not only with the employes and officials of the company, but with shippers and townsmen as well. He had two hobbies. One was to have a clean office arranged according to his personal wishes, which the railroad granted, and the other to have an abundance of fine clothes and good shoes. Consequently, he was always unusually well groomed. He never voluntarily took a vacation, because he believed vacations tended to make people dissatisfied. Having nothing special to do now, however, he plans to take a prolonged vacation and see something of America. Now the road will put his name on the honor roll and give him an engraved and framed certificate of service, signed by E. M. Rine, chairman of the pension board, and J. M. Davis, president of the railroad.

Clearing House For Accounts

By T. J. Welsh

More than 300,000 railroad drafts travel about the country every month in settlement of interline accounts. Every draft must be typed, numbered, signed and handled by the accounting department and treasury department of the railroad, and must be handled also by several banks. Most of the trouble and expense in handling these drafts, I think, could be eliminated by establishing at some central point a railroad clearing house. Once a month all the roads would present to the clearing house a statement of all freight, ticket, mileage, claims, and other items subject to draft due from foreign lines. On the first of the month the clearing house would send every road a check for the net balance due it, or draw a draft if the net balance was not in its favor.

This plan, I think, would save the Class I railroads in clerk hire and stationery at least $1,000,000 a year.

If a railroad went into receivership or failed to meet its obligations the accounts could, of course, be charged back to the other lines. There could be also a large saving in bad accounts. The clearing house with an efficient organization could keep a close check on all roads. If it found that a road could not meet its obligations or was headed for a receivership it could take steps to protect the other roads from a serious loss. After such a bureau was established there might be other duties it could take over that would result in a saving to the carriers.

Courtesy

Courtesy is a mark of self-respect. Through lack of it a man betrays his poor opinion of himself. Obsequious politeness may be the attitude of a menial, for it is often only an artificial, an insincere, imitation of courtesy.

But the man who looks you squarely in the eye and smiles good naturedly not only wins a reciprocal friendly feeling but commands your respect.—*Soo Line Topics.*

GOLD HEATING

While Winter Winds BLOW

THE modern traveler sits comfortably in the warm chair car. In the luxury of today, the shivering discomforts of earlier years are long forgotten.

It was in 1879 that Edward Gold began this modern era with the first modern type car heating appliance.

And this inventor was the founder of the organization which bears his name. Today's efficient Gold car heating equipment upholds the pioneering leadership won fifty years ago.

GOLD CAR HEATING & LIGHTING COMPANY

220 36th Street, Brooklyn, N. Y.

GOOD AS GOLD

Bush Terminal Building No. 2

In Canada:
CANADIAN GOLD CAR HEATING & LIGHTING CO., *Ltd.*
728 St. James St., Montreal

In the Orient:
CHINESE ENGINEERING AND DEVELOPMENT CO.
18 Ermanno Carlotto, Tientsin, China

In the United Kingdom: LAYCOCK ENGINEERING CO., *Ltd.*, Victoria Works, Millhouses Sta., Sheffield

Frank McManamy,
Chairman, Interstate Commerce Commission.

I. & U. Photo

Little Stories About Big Men

THE MODERN version of "Canal Boy to President," sits in the corner room of the Interstate Commerce Commission behind a glass door marked "Chairman." His is a romance—a personal romance—from water boy to head of the railroad regulating body of the nation, second in influence only to the Supreme Court of the United States.

This is Frank McManamy, a railroad man through and through. He has breathed the atmosphere of the railroads from boyhood. He has traveled over every line in the country. He is equally at home talking the language of the engine cab or the technical phraseology of the traffic directors.

Forty-five years ago, Frank McManamy, as a water boy, definitely succumbed to the romance of railroading, and determined to devote his life to it. Now at the age of 60, the tall, rotund executive whose hair is almost white, has reached the pinacle of his climb and still in the business of railroading.

Born near Altoona, Pennsylvania, September 3, 1870, he at first received only that education which can be gained at a common school, supplemented later by two terms at a teachers' normal school. That was many years ago, and while he has not said it, there is a good chance that he has had the opportunity of using his pedagogy many a time since then.

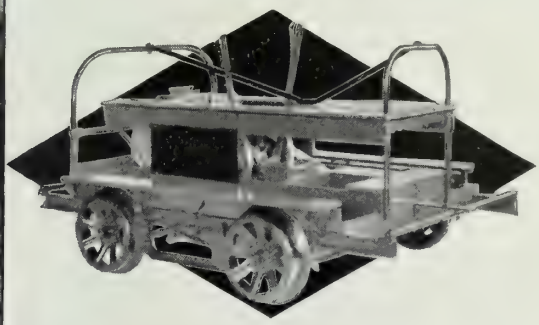
At the age of 15 he started out to conquer the world with a water bucket in the construction department of the Pennsylvania Railroad, the first attack being in the clearing of the right of way for a branch line. He must have carried water most efficiently for he was invited soon to be a member of a section gang working at track laying and maintenance of way. Five years later, in 1890, he went to Michigan and obtained a job in the shops of the Chicago & West Michigan Railroad at Muskegon, now a part of the Pere Marquette. A year later he became a locomotive fireman. Already he was gathering speed on his upward and onward journey through life. Indeed he was going so rapidly that at 21 he joined the firemen's union, taking out a card and with it a life insurance policy based on his age at that time. He still has his card and the policy, and all payments have been kept up. He has proved a good risk and a profitable one.

It was while firing a locomotive on a freight run of 150 miles a day on this road, that he attended a business college in Traverse City. Something persuaded him to flirt with the idea of being a lawyer, or perhaps Destiny was beckoning him as in his normal school. For about two years he spent his time reading law under the instructions of F. A. Nims of the firm of Smith, Nims, Hout and Irwin of Muskegon. But he never got away from the main line.

After six years of firing he became an engineer and two years later, in 1899, he resigned to take a place as air brake instructor for the International Correspondence Schools. This was no regression. Here he had an opportunity for developing that faculty for organization that he has so markedly displayed. He had charge of the building and equipping of some of the school's air brake instruction cars of which there were, at one time, fifteen in service. Later he became assistant manager of the railway department and then engineer of

CO-OPERATION

The outstanding work done during the Mississippi floods and Florida disasters illustrates the degree of co-operation that railroads are ever ready to extend—not only to the public, but to each other—in routine of daily service.



THE FAIRMONT S2
Standard Section Car—Two Types
—Wood or Steel Frame

The spirit of unselfish service motivating the Railroad World was the inspiration that brought world-wide leadership to the Fairmont organization.

This is seen in the Fairmont objective—to sell not equipment, but *lowest over-all cost* of service. The fact that over half the motor cars now in use are Fairmont products is undeniable evidence that this objective has been consistently attained and the Railroad World appreciates the spirit behind it.

When you transact business with Fairmont, you deal with specialists who are ready with a *lowest cost* solution to every problem of motor cars on maintenance work. Representatives everywhere to serve you.

FAIRMONT RAILWAY MOTORS, INC.
FAIRMONT, MINNESOTA, U. S. A.

General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO
District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans
FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines push cars and trailers, roller axle bearings, wheels, axles and safety appliances

Fairmont Mudge — Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT

tests in charge of one of the dynamometer cars that was used for making tonnage and fuel tests.

This period of service lasted for nine years, during the whole of which he was acquiring an intimate, first hand knowledge of locomotive performances. Then, in 1908, he passed an examination for the position of inspector of safety appliances with the Interstate Commerce Commission with a rating of 96 per cent.

Thus at the age of 38 Frank McManamy had progressed from water boy, through various and sundry schools, practical and theoretical, to his first commission with the famous regulatory body.

From the first he has been traveling. He has continued to travel. As a practical railroad man he knows every line in the United States. He has been over all of them. For three years he was an inspector. Then he was appointed assistant chief inspector of locomotive boilers. This was in 1911 when, following the death of the man just above him he came into the next higher position which he held from 1913 to 1918. He was moving along in life.

An Informal Snapshot of Mr. McManamy.

While in the employ of the commission as safety appliance inspector he served on the committee which prepared the safety appliance standards for cars, and, as assistant chief inspector of locomotive boilers, assisted in the preparation of the locomotive boiler inspection rules. As chief inspector of locomotives, he was in charge of the locomotive inspection rules under the locomotive inspection law as amended. Later and for several months prior to the beginning of federal operation he had charge of special investigations concerning the condition and maintenance of railroad equipment, acting under the direction of the Interstate Commerce Commission.

Remembering these years of inspection, of checking, of investigating, Chairman McManamy remarked as he looked out of his windows down Pennsylvania Avenue: "I was always on the go. It was 50,000 miles a year that I traveled at times, and I came to know roads.

"Now when questions relating to various roads, to yards, freight handling, equipment, and other matters are up for discussion, the pictures of the other days come before my mind.

"I remember the freight yards in the North, South, East and West. I remember when I rode the switch engine in one place, watch in hand checking, and in another place carefully studied the whole layout. This experience has been a valuable background and has helped me greatly.

"Other men have had different experiences, of course, but mine has been practical. I cannot divorce myself from the lessons learned in the years when I was actively on the road traveling from one place to another on official business, but all the time in mighty close contact with the practical and technical elements of railroading."

During the days of federal operation of the railroads, Mr. McManamy devoted his time to the work of railroad administration in the capacity of assistant director of operation in charge of mechanical matters. In this capacity he was actively engaged in the preparation of the designs for standard locomotives and freight cars, a work that was done by a committee of representative superintendents of motive power with experts chosen from the builders of locomotives and cars. The results of the work are now a part of the mechanical history of the country, and the administration locomotives, as they are called, that were designed by it, are generally regarded as exceptionally well designed for the purposes for which they were intended.

Ever climbing, Mr. McManamy became chairman of the committee on standards for locomotives and cars which passed upon matters pertaining to their construction and to the appurtenances that should be used.

During the trying period of the war a thousand troubles came his way. The adjustment of working hours and wage scales was among them. After the armistice it was the effort of working out of a set of working rules. It was at this time that five months were spent by a committee with a result that about 90 rules were passed and about 100 were turned down. Hearings were held. There was trouble brewing. The charge of delay was made.

The director-general then called into conference Mr. Tyler of operations, Mr. Carter of labor and Mr. McManamy to see what could be done. Mr. McManamy recommended one of two things: either that the men be flatly told that they could have no standard working agreement, or that the government proceed to negotiate such an agreement, and under the direction of Mr. Tyler and Mr. McManamy it was completed and approved.

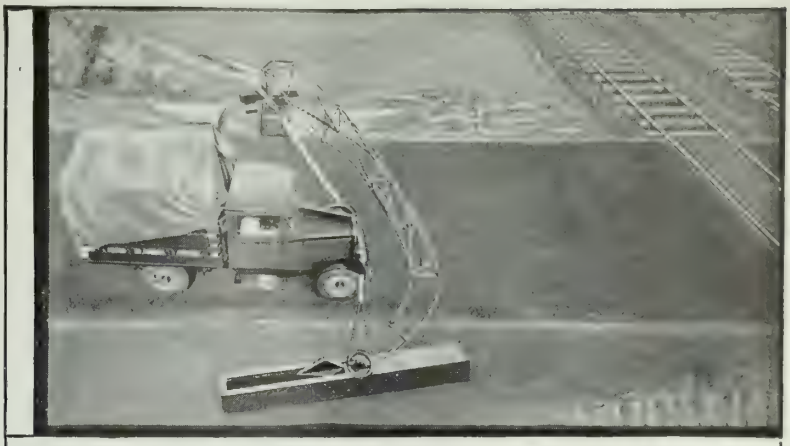
Such problems were meat for this boy who had worked his way through the maze of early problems. Tackling hard and long standing difficulties became a favorite pastime. Someone was always leaving a particularly tough one on his desk. It was the cancelation of an order to locomotive plants that threatened trouble when the work had been distributed through the shop and Mr. McManamy was notified by long distance. Decisions were made quickly and, as for the present chairman, they still are, and the reply went back over the telephone to complete the order. The administration took them and put them into service in the coal region—twenty-five Mikado locomotives. Everything was worked out smoothly and the times were critical.

Chairman McManamy, still the man of decision in railroad matters, has every confidence in the transportation business of the nation. Competition between railroads and buses and trucks and airplanes does not worry him.

"For many years, probably as long as you or I shall live," he said, "the vast bulk of the transportation business of the country will continue to be carried by the railroads. There may be auxiliary efforts by the railroads to utilize the airplane and the trucks and buses, but the bulk of the business will go over the rails. I may be accused of being a back number in this," he said with a smile, "but I cannot see it in any other way.

"I do feel certain of this, however, that the kind of transportation the

The HIGHWAY GUARDIAN



Forces The Motorist to Play Safe—

And Protects Lives

At the moment of contact with the barrier the wire rope gives an even bearing against the car. The snubber has not started to act.

Compare the position of the snubber in this picture with its position in the illustration above. Here the snubber has moved to take up the shock.

If a lowering barrier comes in contact with the roof of a car it causes no damage. A pressure of 5 pounds stops its motion instantly.

Caught between lowered barriers, a vehicle can push a barrier out of the way and drive to safety. The barrier then closes and locks over the snubber.

TO prevent fatal accidents---to stop resulting claims, little or no assistance can be expected from the irresponsible motorists. In spite of gates, lights and signals, they continue to cause accidents at an increasing rate. Nothing can be left to their judgment. Protection, to be effective, must be forced upon them. This THE HIGHWAY GUARDIAN does in a thorough manner.

When THE HIGHWAY GUARDIAN automatically starts to lower, warning lights or signals tell of an approaching train. Within a few seconds a barrier of steel is placed across the road and locked over a snubber. The motorist cannot take a chance, cannot try to beat the train over the crossing. Neither can he become "rattled", lose control and ride in front of a passing train. Regardless of his actions the highway to the tracks is positively closed. If he hits the barrier, a yielding snubber gradually brings the car to a stop within a definite distance. Passengers are safe, damage to the vehicle prevented.

Protection such as this does more than prevent fatalities. Damage claims amounting to millions of dollars each year can be eliminated. And the constant talk of eliminations can be effectively answered. Positive protection can be provided without delay at a fraction of the cost required to build underpass or overhead crossings. Write for complete operating details.

The fundamental idea from which THE HIGHWAY GUARDIAN has been developed was the ingenious conception of Mr. Joseph Strauss, eminent consulting engineer and builder of many of the world's famous bridges.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

people want they will have, and the organization best adapted to give the most efficient service in any line of transportation will survive. In this I feel confident that it will be the present railroad systems."

Frank McManamy comes to the chairmanship of the Interstate Commerce Commission when it is in the midst of the most important task that has ever confronted it, that is, the development of railroad consolidation along lines laid down in its recent report.

Just how far is it possible to go with the dear old Golden Rule in running a railroad? All the way, says Edward Harris Maggard, president and general manager of the Northwestern Pacific Railroad—he's called "Ed" rather generally on the Pacific Coast—and surely he ought to know; he has been practicing it for several years in the affairs of the company, the employes, and the idiosyncracies of that element which theatrical folk refer to as Old John Public.

The Maggard policies are not new. Much has been said about similar ideas in other railroad families here and there, and even in great business enterprises outside the field of transportation. Many a wise and smug gentleman in charge of big properties involving the fortunes and happiness of thousands of men and women has preached the Christian virtues of the Golden Rule in luncheon talks or interviews only to prove himself, in his every day relationships, a most proficient tergiversationist if not actually guilty of whiffling. All of which is a gentle way of saying that the average advocate of the Golden Rule is full of hokum.

Not so, however, with Edward Harris Maggard. Grateful to the Source from which all blessings flow, we here record our testimony declaring the genuineness of the man's friendliness toward those with whom he associates day by day, on the line or in the town, digging into the troublesome problems that come inevitably to an executive for decision. Theodore Roosevelt preached the Square Deal for every human being, and under his pulpit he kept a Big Stick to enforce the ideals he advocated. Ed Maggard acts more than he talks. The door to his office in San Francisco actually is open. All you have to do is get in line, and when your turn comes you'll see the Golden Rule in action. We have gone about a bit here and there among the men on the Northwestern who take his orders. We have yet to find a knocker, and this, after many years' experience on many railroads, justifies our determination to award, in these human chronicles, the mythical rubber-tired butter-dish to the gentleman here under the microscope.

Edward Harris Maggard
President, Northwestern Pacific.

Edward Maggard was born in Mississippi, in the town of Meridian, on a day in August, 1875, a matter about which his wishes were not considered any more than with the subsequent decision of the family heads to move to Texas. And there, in the democratic and Democratic atmosphere of Denison's public schools, ultimately he absorbed whatever rudiments of education came his way.

At the age of sixteen, he started his railroad career as a call boy for the Missouri, Kansas & Texas. A few years later, he was superintendent of terminals for the El Paso & Southwestern, and in 1907 he was called to the Petaluma & Santa Rosa Railway as general freight agent. Five years later he was its vice president and general manager, then president and general manager.

Under his direction, the Petaluma & Santa Rosa became an outstanding success of the electric railway industry in the West. It was because of what he had done for that road that he was asked, in February, 1928, to assume the responsibility of solving the very difficult problem with which the Northwestern Pacific found itself confronted. The Northwestern Pacific, physically and otherwise, is a far different road from what it was then, and its present status reflects the welding of the Golden Rule and practical railroading in Edward H. Maggard's policy of "Service with a Smile." And no hokum.

You get a good view of the man by considering the way the Northwestern Pacific, which is Ed Maggard, let its patrons know that Christmas meant something to a corporation. The fact that many of the big brothers of transportation give that festal holiday its proper place on the crowded transcontinental trains does not in any way detract from the Northwestern's performance. It showed that Maggard was determined to suffer from no differences in treatment, and that the people who spend their money on that line and its ships were going to have just as jolly a time as those who traveled over the longer lines.

In the upper cabin of each of the company's passenger steamers was a Christmas tree lighted and ornamented into a thing of beauty. Also, there was a Santa Claus in regulation attire, who saw to it that each of the younger passengers received a memento of his, and the company's, good will. Likewise, the passenger terminal and other parts of the property were decorated with greens and lights in the traditional Christmas manner. The holiday spirit could not escape permeating employes and patrons alike. Every one of the nearly 3,000 employes of the Northwestern Pacific received at his home a holiday greeting card from the president and general manager. Appropriately, this was in the form of the familiar red box-car displaying the company emblem. The Christmas greeting was

LET THE GADGETS WAIT

In their desire to make passengers conscious of the comforts that railroad travel provides, car builders have leaned toward razor-blade slots, improved water coolers, porcelain wash basins, better lighting, soap squirters and other gadgets that are convenient and attractive but not vitally important to passenger comfort.

Passengers spend most of their time sitting. It is most important that their seats be comfortable. Unless the chairs are soft and springy, unless they support the small of the back, the arms, the feet, they are not as comfortable as they might be.

Hale & Kilburn specializes in car seats. The modern Hale & Kilburn double rotating chair shown above is as comfortable as a favorite fireside chair. It really gives the passenger a restful ride. It gets him to his destination in perfect comfort.

Many leading railroads have paid special attention to this matter of seating comfort with very profitable results. Let us show you what can be done.

HALE & KILBURN SEATS

HALE & KILBURN CO.

General Offices and Works: 1800 Lehigh Ave., Philadelphia

SALES OFFICES:

Hale & Kilburn Co., Graybar Bldg., New York.
Hale & Kilburn Co., McCormick Bldg., Chicago.
E. A. Thornwell, Candler Bldg., Atlanta.
Frank F. Bodler, 903 Monadnock Bldg., San Francisco.
W. L. Jefferier, Jr., Mutual Bldg., Richmond.
W. D. Jenkins, Praetorian Bldg., Dallas, Texas.
H. M. Euler, 146 N. Sixth St., Portland, Oregon.

under the box-car door which slid open in the customary manner. Employes, who were unfortunate enough to be confined to their homes or the hospital by illness, received flowers or potted plants with Maggard's Christmas greeting.

But contacting directly with employes, in person and in writing, is not a holiday time divergence with Ed Maggard. It is an all-year-round routine. When, in February of 1928, he took charge of the Northwestern Pacific and created "Service with a Smile," he asked every employe to help him carry out the public relations policies to which he was committed. They have done so and the reason is that under his dynamic leadership, clear statement of the difficulties to be overcome, and straightforward action in removing them, no one can resist what has come to be known as the Maggard personality.

The telephone may be a breeder of trouble or a maker of friends. Maggard was quick to sense this and each Northwestern Pacific phone bears a card reading, "This telephone affords an opportunity for your courtesy to broaden the company's reputation for cordial relations. In its daily use, remember that so far as the person at the other end of the line is concerned, *you are the company.*"

Inculcation of telephone courtesy did not stop with the display of this card. Through circulars and articles in the company magazine, station employes and others, who had occasion to use the telephone, were told what it meant to receive a cordial salutation and a satisfactory response to a request for information.

Even such an apparently small matter as having employes extend the customary "Good morning" was not overlooked by this forward looking railroad president. He gave every employe a 40-page booklet devoted entirely to this matter, in addition to using other means of getting the "Good morning" habit working. As was to be expected, patrons and the public generally were quick to respond to this spirit of friendliness and service, and, after less than two years of Maggard leadership, good public relations are taken as a matter of fact in the Redwood Empire, of which the Northwestern Pacific is the transportation artery.

The unique things which Mr. Maggard has introduced into every day railroading are practically numberless, but every one of them has done its share toward better understanding between employes and management, and the road and the public.

As an example, train delays are bound to happen on the best regulated railroads. These are serious enough when they apply to main line traffic, but when a commuter train is delayed a situation is created that is fraught with hazard from the public relations viewpoint. When the entire interurban system, carrying 6000 persons to their work in the city or homeward bound, is tied up by a failure of the primary electric current supply, an even more serious situation arises. Realizing that even commuters are human, and if told the cause of the delay with an explanation of why it could not have been foreseen and prevented, they would be sympathetic rather than critical, Maggard did just that. When there was a breakdown in commutation service during the city-bound movement in the morning, each commuter was handed a card on the homeward-bound trip in the evening, explaining, over the president's signature, the cause of the delay and other pertinent facts.

Other roads issue contact leaflets, but it is doubtful whether any of them get into them the personal touch found in All Aboard, the Northwestern Pacific public contact leaflet. On a given day every month All Aboard is placed in the hands of every patron of the company. Commuters and other northward bound passengers receive the leaflet as they pass through the gates at the San Francisco ferry, while copies are handed to southward bound passengers by trainmen. Shippers and receivers of freight get theirs when they call at the depot, or it is mailed to them with their notices of freight or expense bills.

Likewise, the employe magazine, The Northwesterner, a medium of direct contact between Mr. Maggard and the workers, is mailed to them at their homes. In addition, attached to every half-monthly pay check is a "friendly chat" with Mr. Maggard. These chats are brief, each dealing with a different topic.

"I have only one policy, the Golden Rules," says Mr. Maggard. "The office boy's job means as much to him as my position means to me, and he and every other employe must be assured justice and fair dealing in their relations with the management. The traveling and shipping public expects courtesy and service, and it must be treated courteously and given the best service it is possible to give.

"Two years ago," said he, "the Northwestern Pacific might have been compared with a heavy freight train confronted by a grade which it was unable to surmount. This grade was made up of public disapproval and employe discouragement. My coming to the property was merely the cutting in of a helper engine. The helper engine, with the regular engine, which represents the road's employes, can now surmount the grade. Given a few years more of teamwork, it will be as if the grade were never there."

I. C. Engine Runs 1842 Miles

The Illinois Central System recently achieved a new record in coal-burning passenger locomotive performance when the New Orleans Limited was run through from Chicago to New Orleans, a distance of 921 miles, with but one locomotive. The Mountain type locomotive No. 2421 made the complete trip without hand lubrication en route and with no attention to the fire other than the usual shaking of grates and dumping of ashes at division terminals where the engine crews were changed.

The test was severe, for the New Orleans Limited is a heavy train, consisting of steel baggage, mail and express cars, day coaches, dining car and Pullman sleeping cars. The schedule is such that the running time between stops is 60 or more miles per hour for more than 50 per cent of the time.

The same locomotive took the train back to Chicago. The coal used in the territory between Chicago and Memphis clinkers and requires expert firing to maintain fires in good condition for long distances. However, the entire run of 921 miles in each direction was made with the same fire.

If Los Angeles Hears About This!

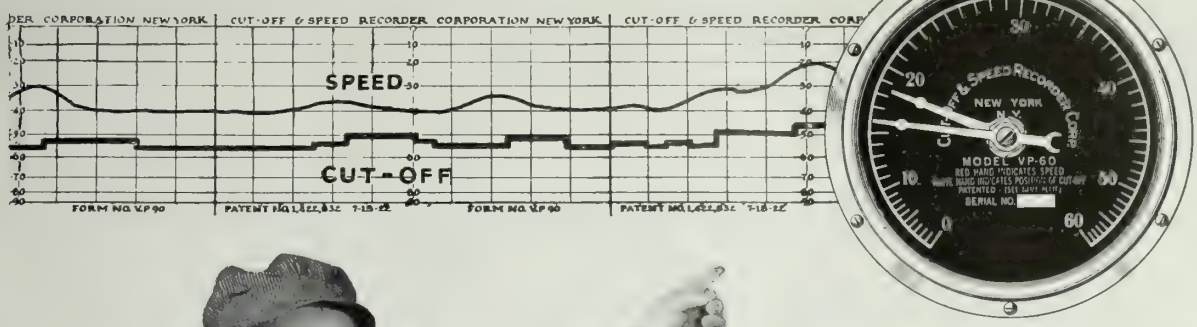
Someone asked the Atlanta Journal a few days ago, "What airports do the greatest daily business?"

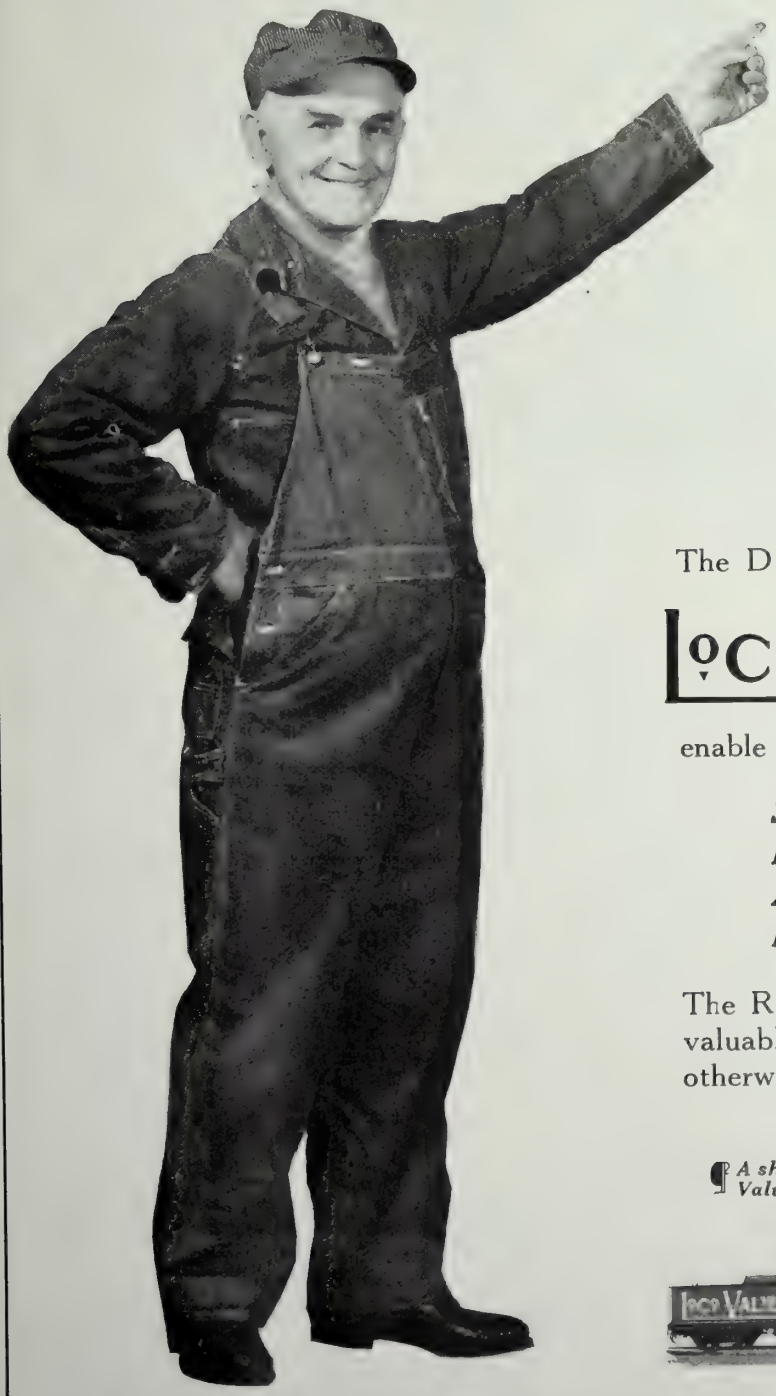
The Journal replied:

The department of commerce has no definite figures but says that among them would be Le Bourget, France; Tempelhof, Germany; Croydon, England; Cleveland Municipal Airport and Chicago Municipal Airport, United States.

"The most far-reaching phenomenon of our time is the industrialization of woman."—*Will Durant.*

"The one real security that a man can have in this world comes through some reserve of ability that he may have."—*Henry Ford.*





A Guide

To the Engineer and a Permanent

Record

The DIAL INDICATIONS of the

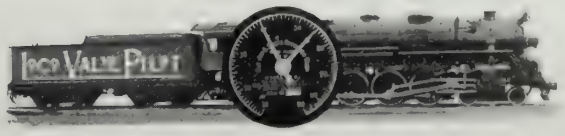
LOCO VALVE PILOT

enable the Engineer to

Save Fuel
Haul More Tonnage
Accelerate Quicker
Make Better Time

The RECORD TAPE furnishes a valuable, mile-by-mile, operating log, otherwise unobtainable.

A ship's log is a history of the voyage. The Valve Pilot Record is a history of the trip.



VALVE PILOT CORPORATION

230 PARK AVENUE - NEW YORK

A Railroader Takes a Trip

By T. C. FERNALD
Chf. Clerk, Master Mechanic, N. P. Ry., Dilworth, Minn.

TALKING about traveling, I have just returned from quite an extensive trip, coast to coast, mountain and plain, and have experienced about all the varieties of earth's contours that the North American continent presents, and believe me, there is some variety.

In traveling one naturally has a lot of time for thought and little happenings make big impressions. I was impressed with the pride of workmanship shown by locomotive engineers and firemen almost everywhere, and by conductors and brakemen on many of the roads over which I traveled. I wonder whether it is not a fact that these men realize to the fullest extent that they probably are the most important factors in the success or failure of these great transportation mediums. Possibly it is the sense of personal achievement that makes them consider, first, the comfort and convenience of the passengers in their charge.

Some travelers will disagree with me, I know, and will cite cases in which their comfort was not the first consideration and, no doubt, prove their case, but my only answer is that we may ride from Winnipeg to the Gulf, from New York to Los Angeles, from Portland, Maine, to Portland, Oregon, and 90 per cent of the way receive the courteous, comfortable treatment we have been taught to expect and which we quickly forget. But we remember the unexpected, discourteous treatment, the rough handling of the train or some other untoward thing that may happen occasionally. Possibly a conductor was inconsiderate or an engineer failed to handle the air properly or some other thing happened entirely within the control of the engine or train crew. We remember these things. We talk them over with our fellow passengers and with our families and friends at the journey's end. This is human nature. But were we to remember the many little courtesies and other things done for our comfort, sometimes under a serious handicap, we should agree that the great majority of train and engine crews give us first consideration.

The railroads in the United States and in Canada are utilizing every device for the safe and comfortable handling of trains, passenger trains especially, and are offering the skilled men who operate the trains and engines every facility for keeping in touch with the proper using of these devices.

Rail transportation has become so perfect that the thought of safety seldom enters the minds of travelers. We get into a coach, settle down to read comfortably or get into a sleeper and go to bed and to sleep, knowing

Part of the Santa Fe's Fine Ticket Office at Los Angeles.

that we shall be awakened at the proper time if need be. Accidents very rarely occur. The feeling of adventure that once attended a railway journey has vanished; the ride is commonplace. It is the scenery and the interesting towns and cities spread before us in panoramic view that give us the thrill. We ride to get there from here and maybe back again. We know we are going to be comfortable all the way. We know when we leave that we are going to get to our destination at a certain time, and we make our plans accordingly. We are taught that we can bank on these things. It is the unexpected that stands out in our minds. If some engineman, without adequate experience, or one lacking the pride of personal achievement, slaps on the brakes too vigorously or with two or three strenuous applications of air, makes the passengers lurch forward, and starts the train with one or more jerks with momentary discomfort to the passengers it starts them talking, and the question almost invariably is asked, "who is up ahead?" Sometimes the answer from the initiated is, "we've got a dynamiter on the train." Of course, this has no meaning to most of the passengers. They wonder whether that is a name given certain engineers, and they think back and realize that the engineman who previously had handled the train had no such trouble. They wait, and in a little while they find that the trouble has ceased, and maybe they learn that the crews have changed. The dynamiter has set himself out. I have heard remarks that caused me to think that if these particular enginemen did get next to themselves, and I am satisfied that eventually they do, the travelers who ride through that particular district would be quick to note the improvement and mention it to the ultimate advantage of the man and the road.

In talking with some of the railroad men I get quite a slant on human nature. These men are, as a rule, deep thinkers and intensely loyal to the name of the particular railroad by which they are employed, oftentimes for many years, but I seldom get the thought from them that they, individually, are co-partners in the business. Still, it seems to some of us that a partnership best expresses the relationship. Partnerships are made every day between men with money, and men with experience as capital. Training, experience and ability cannot be bought with money.

Railroading all up and down the line is a combination of the money of the investor with the ability of the workers for the common good of both. The worker who puts his personality and his utmost ability into the partnership is the man who really is appreciated by his fellowmen, and his ability is noted and commented upon. He may not hear of it but others do. Every one of these men, imbued with the thought of partnership, with the pride of personal achievement toward the end of serving the public in the best manner possible, puts his railway on the map. Service is the only thing that a railway has to sell. Its reputation is made in getting people and goods from one place to another as expeditiously as possible, combined with safe, courteous and comfortable handling.

I am a small-town fellow in thought I suppose. It thrills me to go down to the station and watch the passenger trains come in. I've never got over the awe and respect I have for the two men up ahead, especially the fellow on the right hand side. Then I go back alongside the train to the rear end, and as I walk along I see the perfect cooperation of every member of the crew, all doing their parts in the great and wonderful scheme of moving persons and goods about the country safely, comfortably and with speed which in the beginning of railroads never was thought possible.

Gas-Electrics for Union Pacific Typify Brill Workmanship

The seventy-three foot Brill Gas-Electrics in the service of the Union Pacific System are typical examples of Brill workmanship. In the first place, the car bodies, trucks and power equipment are all products of the Brill organization. The car bodies are constructed of steel, while the roofs are the plain arched type with aluminum roof sheets. Passenger, smoking and baggage compartments are finished in steel and enameled in attractive colors. Brill plush-upholstered seats provide comfortable seating accommodations. The finished product reflects exacting workmanship and the sixty years of Brill car-building experience. In appearance, power and low cost of operation, Brill Gas-Electrics leave little to be desired.

An unusually efficient inspection service is provided by a corps of experienced service engineers.

Ask for detailed information about the Brill Gas-Electrics built for the Union Pacific System.

Automotive Car Division

The J. G. Brill Company, Philadelphia

Chicago Office: Railway Exchange Bldg.
St. Louis Office: Syndicate Trust Bldg.
Pacific Coast Representative:
Rialto Bldg., San Francisco

Brill Gas-Electric Cars

An Artist's Conception of La Fonda, the Santa Fe-Harvey Resort Hotel at New Mexico's Capital.

La Fonda, the Place of Rest

A Quiet Spot the Harveys Have in Ancient Santa Fe

By Roger W. Birdseye

HALF A dozen years ago, with rare exceptions, there weren't many resort hotels in the Southwest worthy of the name, and not very many of any kind, for that matter. Business men seeking comfort within the varying limits of their expense accounts, or tourists exclaiming over scenery and moonlight nights, took the best the country offered smilingly or with a frown, according to their different dispositions. Well they knew there was always the justly famous western welcome, and this, to a certain degree, softened the grouch and strengthened the hope that some day things might be different.

Of course, you know, as does almost everyone, that Santa Fe is the end of an old, old trail. Great things happened there in the distant years, things that are a part of history, the most romantic of all the thrilling stories that have to do with the up-building of western America. In the memory of every intelligent traveler three names stand out affectionately: St. Augustine, San Antonio, and Santa Fe. They will never be forgotten.

In the Patio.

It seems singularly fitting, doesn't it, when one thinks of the story of this old town, that the newest, and in many respects the most wonderful resort hotel in the country should be named *La Fonda* which, translated, means very properly, the Place of Rest. Once in a while the English language, as Milne, the novelist, said, seems quite impossible, but in this instance it serves the purpose in a marvelous way.

At Santa Fe centers the changeless Spanish-Pueblo Indian region

Railroad Purchases of Thermic

SYPHONS

in January of this Year Were

50% Greater than any previous month

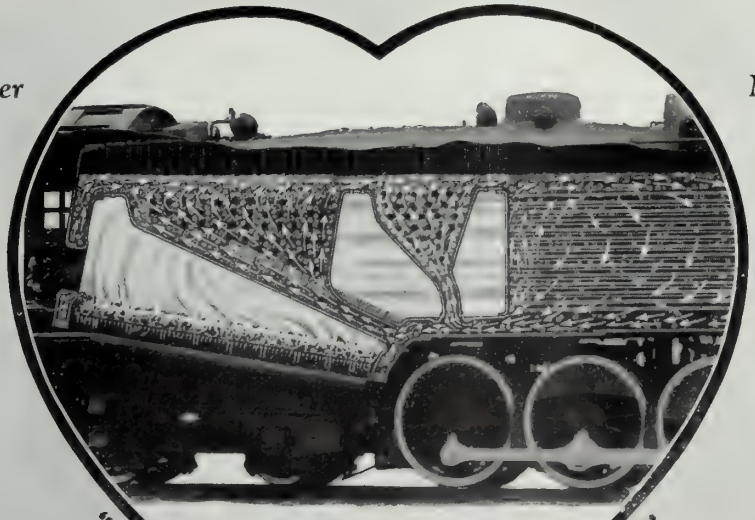
21% as large as the entire year of 1929

(which was the Banner Syphon Year to Date)

LOCOMOTIVE FIREBOX COMPANY
MONTREAL CHICAGO NEW YORK

Increased Boiler Horse Power

Reduced Boiler Maintenance



Circulation Economy

Increased Safety

This, As Anyone Can See, Is a Bedroom, and An Extremely Nifty One, Too.

of the upper Rio Grande Valley and the New Mexico Rockies. Spanish and Indian influences, therefore, have contributed most to the body and soul of the great pile that faces and dominates the leafy plaza of the quaint old capital. Back it sweeps in lifting terraces, earth-colored, without one sharp, harsh outline, an exterior as natural in its picturesque environment as the ancient pueblos it glorifies. Within, the life of *La Fonda* centers about a sunny, rough-tiled patio of Old Spain, in public rooms and lounges where a hundred subtle touches combine with a remarkable blending and harmonizing of all the colors to produce a whole with something we call atmosphere, individuality, or distinction.

The interior decoration of *La Fonda* is the work of Miss M. E. J. Colter, a labor that climaxes 20 years of study of color and Southwestern settings for the Harvey system. Six months of planning preceded other months of execution. Every room of more than a hundred was developed separately, bits of a great picture puzzle perfect only when assembled.

Throughout the furnishings are scattered priceless museum pieces from Spain. Supplementing these are over 800 other articles of furniture created to specification, decorated individually, and then dropped into appointed settings. In securing color harmonies brilliant, shiny, new-looking effects have been avoided, conventional ideas discarded. There are hooked rugs, made to original designs by the North Carolina mountaineers, and, for comfortable seats are the wrong-side sheepskin cushions of blacksmiths' aprons. The window drapes are endless in color and pattern. There are tiles and imitation tiles, decorated, from Mexico; wicker stands and tabarets from Poland with a Mexican effect; Pueblo Indian paintings in every room; hand-made fabrics from Georgia. Not only was this country combed for textiles and other handicraft but Miss Colter went to China, Morocco, Persia and Egypt for her materials.

The cabaret wall decoration by Olive Rush is a symposium of old Santa Fe and round-about. Geraniums in lard pails, with the label thereon; goats eating clothes off the line, quaint burros, bearing wood or natives; serenaders and senoritas in balconies; matadores, trovadores, caballeros and novias; prairie dogs, road runners, parrots, somnolent *paisanos,* and a delightful *payazo* or clown, who romps amid vines and things about the entrance, where a scroll over the doorway introduces one to the New Mexico Room. The painting is done in the random, graceful, sketchy, humorous vein which characterizes the artist; never obtrusive, and with a new discovery on the other side of every pillar.

There is more to *La Fonda* than this tale tells, much more than can be told in restricted space. And it would be a wonderful story; but something must be left for the imagination. Isn't it enough to say that once settled into the life of this great resort one ceases to think about outside matters? You don't even worry over the charges, whatever they may be, and they are not excessive.

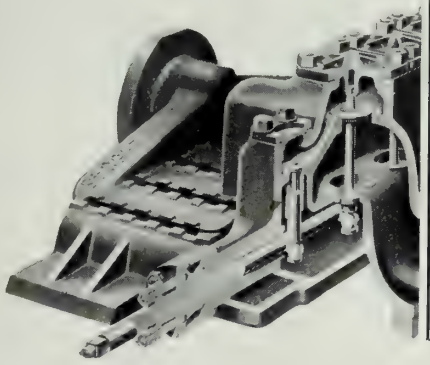
La Fonda is a Place of Rest, well managed by men and women who know their business. This is a science, and its finest feature is that of knowing just when to let the guest do what he wishes to do, one of the most wonderful things that science has discovered. Samuel Johnson, an Englishman, once said nothing had been contrived by man by which so much real happiness has been created as by a good tavern or inn, a Place to Rest.

The Copy Didn't Say, But We Suspect This Is the Lobby.

In Four Years

of

Remarkable Progress



IN the short time the American multiple throttle has been available its wide application is indicative recognition of its fundamental advantages.

Its multiple valves, a distinctly new departure, provide ease of throttle operation and perfect graduation of steam supply. On any locomotive this means greater flexibility of operation, better, quicker control and increased safety of train movement.

Being an integral part of the superheater header the American multiple throttle simplifies application, reduces weight, facilitates maintenance and reduces costs. If a shut-off valve is used repairs may be made to the throttle without the necessity of blowing down the boiler.

Because of its location in the smokebox the superheater units are constantly filled with steam eliminating the need of the superheater damper. This location also permits the use of superheated steam for all auxiliaries thereby effecting additional economies.

American multiple throttles have demonstrated their flexibility and dependability under all conditions of operation. They provide an ideal arrangement for modern power and meet every condition of modern train operation.

AMERICAN THROTTLE COMPANY, Inc.

17 East 42nd Street
NEW YORK

Peoples Gas Building
CHICAGO

Canadian Representatives: The Superheater Company, Limited, Montreal

A-259

Capital expenditures made by Class I railroads in 1929 for new equipment and additions and betterments to property used in transportation service totaled $853,721,000, according to complete reports for the year just received from the carriers by the Bureau of Railway Economics. This was the largest amount expended for such purposes in any year since 1926, when capital expenditures totaled $885,086,000.

Unexpended authorizations representing physically uncompleted work were carried over into 1930 from 1929 to the amount of $624,310,000, the largest amount of carry-over found on the books of the railroad companies on any January 1 on record. The projects included under these authorizations for $624,310,000 of capital expenditure will be carried to completion as rapidly as possible during the current year, along with additional projects that will be authorized between now and the end of the year. The amount of the additional authorizations, however, can not now be estimated.

Of the unexpended authorizations carried over into 1930 $183,908,000 was for equipment and $440,402,000 for roadway and structures, the largest unexpended authorizations from physically uncompleted work ever carried over from one year to another.

Capital expenditures during the final quarter of 1929 amounted to $279,901,000 compared with $176,498,000 during the corresponding three months of 1928. This was an increase of $103,403,000 or 58.6 per cent. Expenditures for new equipment totaled $110,617,000 compared with $58,334,000 in the final quarter of 1928, an increase of 89.6 per cent. Expenditures for improvements to roadway and structures amounted to $169,284,000 compared with $118,164,000 in 1928, an increase of 43.3 per cent.

The amount of capital expenditures in 1929 for equipment was $321,306,000 compared with $224,301,000 in 1928. This was an increase of $97,005,000 or 43.2 per cent above the preceding year.

Roadway and structures expenditures aggregated $532,415,000 compared with $452,364,000 in 1928, or an increase of $80,051,000 or 17.7 per cent.

Capital expenditures made in 1929 for locomotives amounted to $70,660,000 compared with $51,501,000 made in 1928; for freight cars, $191,917,000 compared with $116,549,000 in 1928; for passenger cars, $38,670,000 compared with $41,215,000 in the preceding year; for other equipment, $20,059,000 compared with $15,036,000 in 1928.

Capital expenditures for additional track in 1929 amounted to $129,148,000 compared with $116,494,000 in 1928; for heavier rail, $46,862,000 compared with $47,192,000 the year before; for shops and engine houses, including machinery and tools, $36,561,000 compared with $24,324,000 in 1928; for additional ballast $17,049,000 in 1929; for all other improvements, $302,795,000 compared with $248,606,000 in 1928.

Capital expenditures during the ten-year period aggregated seven and one-half billions of dollars, or $750,000,000 a year. Expenditures during 1929 exceeded this average by $103,000,000 and were exceeded by the expenditures of only three previous years, 1923, 1924 and 1926.

Aerial Freight Coming

Nation-wide aerial freight service became a promise of the near future when incorporation papers for the United States Aerial Express Lines, Ltd., were filed a few days ago, in Phoenix, Ariz., according to announcement by C. O. Davis of the Aircraft Finance Corporation of America.

The organization will use ships of its own design, especially equipped to handle freight loads. These are now being designed. These planes will have a five to seven-ton capacity and will be powered with Diesel aircraft, oil-burning motors. They will be equipped with heat or refrigeration, as the need requires, and will be built at a cost of approximately $110,000 apiece.

New York to Chicago 130 Pound Rail

The longest stretch of the heaviest rail in the world was completed by the Pennsylvania Railroad March 5, when ceremonies marking the spiking of the final rail were held in Chicago. The Pennsylvania is using steel rail weighing 130 pounds to the yard in all rail renewals over the entire system. The Chicago-New York line is the first long stretch to be completed with the new, heavy standard rail. The entire double track of 908 miles between the two cities is now laid in 130 pound rail.

Revenue Loading Lower

Loading of revenue freight for the week ended on February 22 totaled 828,890 cars, the car service division of the American Railway Association reports show. Due to the observance of Washington's birthday this was a decrease of 62,707 cars below the preceding week this year. It also was a reduction of 76,613 cars under the same week in 1929 as well as a reduction of 40,527 cars under the same week in 1928.

Miscellaneous freight loading for the week totaled 306,659 cars, 19,792 cars

IN THE LIGHT OF EXPERIENCE

In the early existence of the Air Brake and the Car Coupler, few thought them capable of even successful performance; fewer still believed they possessed great economic value in the movement of trains. The prediction then that they would become indispensable to efficient train operation would have been regarded as the dream of a dreamer.

Yet both the Air Brake and the Car Coupler have become indispensable — modern railroading would be impossible without them.

Apart from the structural merit of these two equipments, the explanation of their great value is found largely in the fact that both are Automatic.

The ROBINSON CONNECTOR is AUTOMATIC. Its definitely known economies are great. They clearly place it in a class with those two indispensable equipments —the Car Coupler and the Air Brake.

ROBINSON AUTOMATIC CONNECTOR

415 Lexington Avenue
New York

"Building Automatic Connectors is our exclusive business"

below the same week in 1929 and 3,017 cars below the week in 1928. Loading of merchandise less than carload lot freight amounted to 219,374 cars, a reduction of 7,402 cars under the same week last year and 6,516 cars under the same week two years ago. Grain and grain products loading for the week totaled 41,923 cars, a reduction of 2,010 cars under the week in 1929 and 4,156 cars below the same period in 1928. In the western districts alone, grain and grain products loading amounted to 28,512 cars, a reduction of 2,329 cars under the same week in 1929. Live stock loading totaled 23,206 cars, 559 cars below the same week in 1929 and 7,947 cars below the week in 1928. In the western districts alone, live stock loading amounted to 18,217 cars, a decrease of 114 cars compared with the same week last year.

All districts reported reductions in the total loading of all commodities compared with the same week last year while all except the Allegheny, Pocahontas and Southwestern districts reported decreases compared with the same week in 1928.

San Francisco Bridge Is Approved

The department of war has announced its approval of the application of Oscar H. Klatt of San Francisco for a bridge across San Francisco Bay from Richmond to Marin county, under authority of state law.

The plans approved provide a vertical clearance of not less than 175 feet at mean higher high water for the main span over the channel west of The Brothers for a distance of 300 feet at the center thereof and a vertical clearance of not less than 200 feet at mean higher high water for the span between Point San Pablo and The Brothers for a distance of 300 feet at the center. They provide horizontal clearances of 1,000 feet.

And It Was 25 Below

The smiling gentlemen shown in the picture, on the rear of a Northern Pacific special train at Cloquet, Minn., were "snapped", the photographer reports, just as they were starting home after a four-days' convention of the Wood Conversion Co., and the weather was 25 below zero, which was cold enough to snap anything. They are members of the railroad sales department of the company mentioned, makers of Balsam-wool insulation. About 150 executives and district representatives attended the meeting December 13 to 19. During their stay at Cloquet five Pullmans, two observation cars and two diners provided hotel facilities. In the group shown are representatives from both coasts and the Great Lakes region.

Not a Straw Hat in the Party. Wood Conversion Co., Executives and Representatives Leaving Cloquet, Minn., After the Yearly Meeting.

They are O. J. Stevens of San Francisco, who doubtless wore Balsam-wool for the occasion; C. M. Lee of Detroit; A. D. Bowman of New York; A. H. Purdom, H. W. Hintze, and D. H. Corlette of Chicago; W. A. Wadsworth of New York, and F. C. Vandervort, Jr., of Chicago.

The Western Pacific Loses

The Interstate Commerce Commission has denied the application of the Western Pacific Railroad to construct 126 miles of line in San Joaquin, Stanislaus, Merced, Madera and Fresno counties, Cal.

The rejected proposal, which was advanced by the Western Pacific through its subsidiary, the Western Pacific California Railroad, contemplated a continuous 138-mile line extending up the San Joaquin Valley from a connection with the Western Pacific at Niles Garden, about 11 miles south of Stockton, to a point on Kings River, about 21 miles southeast of Fresno. Operation over 12 miles of the Tidewater Southern Railway between Shoemake and Hilmar, also was contemplated under the proposal.

The decision turns upon the conclusion by commission that the proposed construction would amount to a wasteful paralleling of existing railroads, especially the Southern Pacific and Santa Fe, both of which vigorously opposed the Western Pacific application.

To Spend 4½ Millions

The Western Pacific and its subsidiary lines will expend approximately $4,548,000 during the current year for the upkeep and improvement of their properties and for additional facilities and equipment, in California, Nevada and Utah. A large part of this outlay will be for labor. Of this budget for 1930, which is additional to the amounts required for ordinary maintenance and for construction of new lines or extensions, the Western Pacific will expend about $3,621,000, the Sacramento Northern $829,000, and the Tidewater Southern $98,000.

In budgeting expenditures for 1930 for upkeep and improvements, the Western Pacific is carrying forward the program adopted in 1927 involving an ultimate expenditure of $18,000,000 to improve road and equipment. The object of this program, on which $6,000,000 already has been spent, is to put the railroad in prime physical condition and to anticipate heavier traffic demands resulting from the construction of new lines and extensions. When this year's work is completed the railroad will be in excellent condition to meet additional requirements.

IT PAYS TO CHECK PERFORMANCES

© Ewing Galloway

OKONITE PRODUCTS

Okonite Insulated Wires and Cables

Varnished Cambric Cables

Okonite Insulating Tape

Manson Friction Tape

Okocord

Okoloom

OKONITE-CALLENDER PRODUCTS

Impregnated Paper Cables

Super-tension Cables

Splicing Materials

THERE are few departments of industry where so much responsibility is placed upon perfect operation as in railroad signalling. Here, to the n-th degree, is a need for dependable materials, dependable workmanship, dependable inspection and maintenance. It pays to check, to recheck, to periodically and persistently test and inspect the operation of all equipment.

This exacting signal service is a major field for OKONITE. From the Atlantic to the Pacific, from the shores of the Caribbean to the Northwest Territory OKONITE wires and OKONITE cables have been installed for railway signal circuits on the leading railroads of North America. Their record of over a half century of continuous service is proof of their long-lived dependability.

THE OKONITE COMPANY

Founded 1878

THE OKONITE-CALLENDER CABLE COMPANY, INC.

Factories: Passaic, N. J. Paterson, N. J.

SALES OFFICES:

NEW YORK CHICAGO PITTSBURGH ST. LOUIS ATLANTA BIRMINGHAM
SAN FRANCISCO LOS ANGELES SEATTLE DALLAS

General Electric Supply Corp., Boston, Mass.

Novelty Electric Co., Philadelphia, Pa.
F. D. Lawrence Electric Co., Cincinnati, O.

Canadian Representatives:
Engineering Materials, Limited, Montreal

Cuban Representatives:
Victor G. Mendoza Co., Havana

The Buda Armored Pay Car.

Net Was Some Higher in 1929

Class I railroads had a net railway operating income of $1,274,774,188 in 1929, a return of 4.95 per cent on property investment, according to complete reports for the year just filed by the carriers with the Bureau of Railway Economics. Net railway operating income in 1928 was $1,194,487,805 or 4.72 per cent on their property investment. This compilation as to earnings in 1929 is based on reports from 180 Class I railroads representing a total mileage of 241,854 miles.

The effect of increased economies and efficiencies in operation is reflected in the reports. The ratio of expenses to gross revenues during the year was the lowest for any year since 1917. In 1929 the ratio was $71.69 for every hundred dollars of gross revenues compared with $72.41 in 1928 and $74.54 in 1927.

Compared with an increase in 1929 of 3.1 per cent over 1928 in the volume of freight traffic carried by the railroads, there was an increase of 2.6 per cent in gross revenues and an increase of 1.6 per cent in operating expenses. The effect of increased economies that have come about from improved operating methods, the more prompt movement of freight, fuel conservation, better physical condition of equipment and operation of longer trains, due to installation of more powerful locomotives, is shown especially by the fact that the transportation expense in 1929 was only four-tenths of one per cent above that for 1928 although there was an increase of more than three per cent in the amount of freight traffic handled. Such expense in 1929 amounted to $2,109,519,747, an increase of $7,794,109 or four-tenths of one per cent compared with the preceding year.

Expenditures for maintenance of way and structures in 1929 amounted to $862,701,113, an increase of $14,388,084 or 1.7 per cent compared with 1928, while expenditures for maintenance of equipment amounted to $1,211,342,962, which was an increase of $35,310,666 or 3 per cent.

Passenger traffic in 1929 was the smallest for any year since 1909. Passenger revenues in 1929 amounted to $873,582,447, which was a decrease of $28,589,914 or 3.2 per cent compared with 1928.

Gross operating revenues amounted to $6,352,354,834 in 1929 compared with $6,189,917,190 in 1928, an increase of 2.6 per cent. These revenues for 1929 included approximately $37,600,000 of retroactive mail revenue received from the United States government during the year, in payment for mail traffic handled 1925 to 1928. Operating expenses in 1929 totaled $4,553,968,834, compared with $4,482,041,318 in 1928, an increase of 1.6 per cent.

The railroads paid $402,630,307 in taxes in 1929, an increase of $7,050,258, or 1.8 per cent, over the total tax bill of 1928.

Thirteen Class I railroads operated at a loss in 1929, of which five were in the eastern, two in the southern and six in the western district.

P. R. R. Shows Higher Net

The Pennsylvania Railroad's net for 1929 reached a new high record of $101,360,971, an increase of $18,943,595 over 1928 which, in its turn, had exceeded the results of any previous year. Freight revenue showed an increase of $25,602,005 over 1928, but passenger revenues decreased $1,596,106 which is attributed to motor vehicle competition.

Frisco to Spend Twelve Millions

The Frisco lines have announced expenditure of $12,000,000 on new equipment, to be manufactured during 1930.

Work on 700 coal and 1,000 box cars will start immediately at the plant of the Pullman Car & Mfg. Co. at Birmingham. The output of these cars will be at a rate of 30 a day.

Three hundred 50-ton coal cars, to cost $2,000 each, will be built at the railway's Yale (Tenn.) car building yards, beginning March 1. A force of 50 men will be employed, and it is expected the cars will be delivered within 60 days.

Underframes for the 300 cars, which will be used in the Birmingham coal district, are being furnished by the Virginia Bridge & Iron Co., of Birmingham.

Daily Car Movement Was Faster

The daily average movement per freight car in 1929, according to complete reports for the year filed by the carriers with the Bureau of Railway Economics, was 32.4 miles a day. This was an increase of 1.2 miles over the best previous daily average for any year, established in 1928, when the average was 31.2 miles, and an increase of 2.1 miles above the daily average for 1927. The average for 1929 was an increase of ten miles above that for 1921.

The average load per car in 1929 was 26.9 tons, including less than carload lot freight as well as carload freight. This was an increase of two-tenths of one ton above that for 1928 but three-tenths of a ton below that for 1927.

Net Ton Miles Increased

Freight traffic handled in 1929 by the railroads measured in net ton miles, (the number of tons of freight multiplied by the distance carried), was the greatest for any years on record, according to complete reports for the year received by the Bureau of Railway Economics. The volume moved amounted to 492,179,745,000 net ton miles, which exceeded by 3,477,920,000 net ton miles or seven-tenths of one per cent the best previous record established in 1926. The total for 1929 was also an increase of 14,996,253,000 net ton miles or 3.1 per cent above that for 1928 and an increase of 17,483,630,000 net ton miles above that for 1927.

Bandit-Proof, It Is Said

The armored car shown on this page was shipped to one of the large South American fruit companies for bandit infested regions. It is used principally for the paymaster when going to the various plantations. It is also used by the man in charge of their commissary when collecting receipts from various commissaries.

The car is constructed on the regular Buda No. 619 chassis but armored throughout with 3/16" armor plate steel, the interior being plywood with 1" Celo-

When Locomotive Fractions cast a shadow on your books

UNDER steam operation, the costs of branch line and switching service have virtually eclipsed profits—a shadow that grows darker with each passing year. Fuel consumption is high; availability is low; maintenance is high; safety factor is low; etc.

Westinghouse oil-electric rail cars and locomotives will fade this shadow from your books by lowering or raising the operating fractions as the case may be: oil electrics are in service 8/10 to 9/10 of the time against 4/10 to 6/10 of the time for steam; oil electrics have from 6/10 to 8/10 lower fuel cost than steam; their maintenance expense is reduced approximately ½ from that of steam; oil electrics accomplish 1/10 to 2/10 more work than steam due to smooth, rapid acceleration and ease of control.

Oil Electric

An American Rolling Mill 70-ton, 300-hp., Baldwin - Westinghouse Oil-Electric Switcher Locomotive.

These operating fractions, as well as many others, are analyzed in detail in the following series of advertisements, one of which will appear each month.

The Baldwin Loco. Works, Philadelphia, Pa.—Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

Baldwin-Westinghouse

T 31113

tex insulation between. The roof is also armor plated but with an extra false roof above, which is insulated with Celotex to protect from the hot sun. Bullet proof glass is used throughout, and the radiator is protected with armor plate steel shutters operated from the driver's seat. Port holes for rifle fire are installed in each compartment, which can be closed and locked from the inside. The center compartment is entirely enclosed by armored steel and is used by the paymaster who issues pay checks from the rear window onto the platform at the rear of the car. This pay window is also fitted with bullet proof glass in addition to an armor plate steel shutter which can be closed by the cashier in case of attack. The driver's compartment is at the front of the engine, with provision for a guard opposite him. A dual set of controls is furnished inside the cashier's compartment so that in case of accident to the operator the cashier can operate the car from inside his compartment. The head lights are also fitted with bullet proof glass to prevent their destruction. All windows drop or raise, and are locked from the inside.

Testing Robinson Connector

Information just received is to the effect that the Robinson connector is now undergoing extensive tests. These tests, of so much interest to all railroad men, are being conducted in the plant of the Westinghouse Air Brake Co. at Wilmerding, Pa.

Capacitors for Power Factor Correction

"Capacitors for Power Factor Correction" is the title of Circular No. 1670-B, issued by the Westinghouse Electric and Mfg. Co. This circular briefly discusses the causes of low power factor and means of correcting it.

Pictures of installations and examples of the decreased costs obtained by several companies using these capacitors make the circular of particular interest to power consumers.

J-M Co. Catalog

The Johns-Manville Co. has just issued an informative brochure describing, among other products, the latest developments in friction materials for motor buses. The booklet is well illustrated. Johns-Manville engineers have studied the needs of every phase of transportation from the early days of locomotives to the present era. Chief among the changes recorded in those years has been the important need of better and more positive brakes. This subject is discussed concisely in the new brochure. It may be obtained by addressing the company at 292 Madison avenue, New York.

New Catalog by Waugh Co.

An attractive and informative catalog well illustrated and interestingly written has been issued by the Waugh Equipment Co. of Depew, N. Y., and Chicago. The booklet describes and explains service testing of draft gears with the Waugh portable test car. Railroad engineers understand the value of such machinery. "The Waugh test car," says a paragraph, "brings the testing laboratory to the inspection track. It substitutes automatically drawn draft gear performance curves for casual eye-inspection, and allows the user to determine at once whether the gear in question should be removed for repair or rehabilitation."

Railway Construction

Tracks & Yards

CANADA. — The Temiskaming & Northern Ontario has let a contract to H. F. McLean, Ltd., Toronto, for an extension from its terminus at Mile 97, north of Cochrane, Ont., to Moose River crossing at Blacksmith Rapids, about 30 miles.

MISSOURI.—The Kansas City Southern has asked permission to construct a double track freight line about a mile long along the Missouri River at Kansas City to cost about $1,500,000.

NEVADA.—The Sprucemont Nevada has been authorized to construct a line from Ventosa, south to Sprucemont, 23.5 miles, to cost about $375,390, exclusive of equipment.

TEXAS.—The Texas Short Line has asked permission to build a line from a connection with the Texas & Pacific at Grand Saline to Van, about 11 miles, to reach a new oil field.

The St. Louis Southwestern has asked permission to build an extension from Van Junction to Van, 17 miles, to reach a new oil field.

The Panhandle & Santa Fe and the Kansas City, Mexico & Orient of Texas have asked permission to operate over a line of the Galveston, Harrisburg & San Antonio from Alpine to Paisano, 11 miles, instead of constructing a track as part of the extension now under construction from Alpine to Presidio, 86 miles.

The Rock Island has let a contract to Peterson, Shirley & Gunther, Omaha, for grading a single track line between Dalhart and Morse, about 65 miles.

WASHINGTON.—The Northern Pacific and Union Pacific are receiving bids for the construction of a joint line in the Olympic peninsula from Moclips north to the Hoh river, 60 miles. One contract will be awarded for four bridges, and the other for track laying and trestle work.

Buildings & Structures

CONNECTICUT.—New Haven. The New Haven has authorized the reconstruction of its bridge over West River near New Haven at a cost of about $175,000; the filling in of a timber trestle at Danbury to cost about $50,000; the installation of a pneumatic tube messenger system at the Cedar Hills yards, New Haven, to cost about $100,000; equipment for electrical operation of a drawbridge at South Norwalk, to cost about $58,000.

ILLINOIS.—Chicago. The Chicago & North Western has let a contract to John Griffith & Son Co., for reinforced concrete platforms and other freight handling facilities for the inbound and outbound freight station on the ground floor of the Merchandise Mart to cost about $650,000.

Madison. The Nickel Plate has let a contract to the Roberts & Schaefer Co., Chicago, for an "N. & W." type, 80 ft. capacity bucket, electric cinder plant.

NEW JERSEY. — Jersey City. The Pennsylvania has let a contract to J. Rich Steers, Inc., N. Y., for removing old piers in connection with the construction of piers E and F to cost about $315,000. This is part of the construction work of the rail-water terminal here.

OHIO.—Sandusky. The T. J. Foley Construction Co., Pittsburgh, has a contract from the Pennsylvania for enlarging the receiving yard at Bay Junction to cost about $274,000. Eight additional tracks will be built and the capacity of the yard increased from 5,517 to 6,277 cars.

PENNSYLVANIA. — Philadelphia. Federal Erectors, Inc., Philadelphia, has a contract from the Pennsylvania for a freight car transfer bridge in the South Philadelphia terminal yard to cost about $83,000. A contract has been let to Sinclair & Grigg, Philadelphia, for a ten-

PLACING AN ORDER WITH RALSTON INSURES

QUALITY

Every piece of material used in a Ralston built car is carefully selected and tested. The highest grade of skilled workmen are employed under careful supervision and inspection.

QUICKLY

The layout of the Ralston plant, and its facilities, insures a well balanced program which keeps the cars moving through our plant on regular schedule.

RALSTON STEEL CAR CO.
COLUMBUS, OHIO

STEEL CARS COMPLETELY REBUILT IN RECORD TIME

stall extension to the enginehouse at the South Philadelphia terminal yard to cost about $57,000.

TEXAS.—Texas City. The Texas City Terminal is planning an addition to its grain elevator here to have a capacity of 1,000,000 or 2,000,000 bu., to cost from $1,000,000 to $3,000,000. The present capacity is 500,000 bu.

VIRGINIA.—Petersburg. The Seaboard Air Line plans an improvement program of about $1,000,000 here this year. The main item will be a concrete bridge over the Appomattox River to replace the present wooden structure. The Seaboard tracks from Dunlop street station to the Chesterfield county side of the Appomattox River bridge are to be straightened. Underpasses at the South and Dunlop street crossing are to be built.

Bus Orders

The Public Service Co-ordinated Transport has recently placed an order for 381 buses, 211 of the gas-electric type and 170 of the gas-mechanical type. This order is probably the largest order to be given by a single company. The General Motor Truck Co. will supply 338 chassis; Mack, 10 city type and two parlor car de luxe buses; White, 11 buses; American Car & Fdy., 20 33-passenger de luxe type.

Other orders and deliveries include the following: Albany Transit Co., two Mack 33-passenger city type; Brooklyn & Queens Transit Corpn., one ACF 40-passenger gas-electric coach; Canton Motor Coach Co., five Mack 29-passenger city type; Community Traction Co., four White model 65 buses and four Mack 29-passenger city type; Denver Tramway Corpn., two White model 65 and one Mack 29-passenger city type; El Paso Electric Co., one Twin Coach 21-passenger urban type; Houston Electric Co., three Twin Coach 21-passenger urban type and one White model 65; Milwaukee Electric Ry. & Lt. Co., one Twin Coach parlor car; Motor Transit Management Co., two Mack 33-passenger interstate coaches; Poughkeepsie & Wappingers Falls Ry., one ACF 33-passenger urban type; Rio Grande Motor Way, two Mack chassis; Winnipeg Electric Co., one Mack 33-passenger city type. The Pacific Electric Motor Transport Co. is asking for bids on four motor truck chassis, two trailer chassis and 32 demountable bodies.

Passenger Car Orders

Orders for passenger cars placed since the February issue of *Transportation* include the following: Canadian National, five dining cars, 12 lounge cars and 12 sleeping cars with Canadian Car & Fdy.; Canadian Pacific, 50 sleeping cars, three mail cars, five compartment car frames, two over-night sleeping car frames and 14 parlor car frames with Canadian Car & Fdy.; 10 baggage cars, eight dining car frames, 13 first-class passenger car frames and seven smoking car frames with National Steel Car; Rock Island, 14 coaches with Pullman; Louisville & Nashville, 10 baggage cars with Pressed Steel Car; three diners, four passenger and baggage cars, four coaches and two baggage and mail cars with American Car & Fdy.; Pullman Co., 100 passenger cars with Pullman Car & Mfg. Corpn.; Southern Pacific, ten baggage cars with Pressed Steel Car; Burlington, ten baggage cars with own shops; Big-4, one combination baggage and mail gas-electric rail motor car with Brill; Gulf, Mobile & Northern, two combination passenger and baggage gas-electric rail motor cars and four trailers with Brill; Long Island, 25 multiple unit passenger cars with Pressed Steel Car; 20 multiple unit passenger cars with American Car & Fdy.; Bangor & Aroostook, 12 underframes for passenger cars with Osgood-Bradley. The Long Island has converted 40 steam cars to multiple unit cars.

The Canadian Pacific is inquiring for two gas-electric rail motor cars; Rock Island, five baggage cars; Rio Grande Do Sul, Brazil, 21 passenger cars; Southern Pacific, seven electric motor cars; Union Pacific, two gas-electric rail motor cars and two trailers. The Burlington has reduced its inquiry for ten gas-electric rail motor cars to five. The Reading is inquiring for electrical equipment for 61 passenger cars, seven passenger and baggage cars and two passenger, baggage and mail cars.

Locomotive Orders

According to reports filed with the A.R.A., locomotives in need of repair on the Class I railroads, February 15, totaled 8,541 or 15.2 per cent of the number on line, 8.2 per cent in need of classified repairs and 7 per cent in need of running repairs. This was an increase of 604 compared with the number on February 1, at which time there were 7,937 or 14.1 per cent. Serviceable locomotives in storage, February 15, totaled 6,011 compared with 5,958 on February 1.

The Elgin, Joliet & Eastern is inquiring for eight 2-8-2 type; Illinois Terminal, two 2-8-2 type; Maine Central, one or two locomotives; Michigan Lime, Stone & Chemical Co., two switchers; Northern Alberta, two 2-10-0 type; Toronto, Hamilton & Buffalo, two switchers.

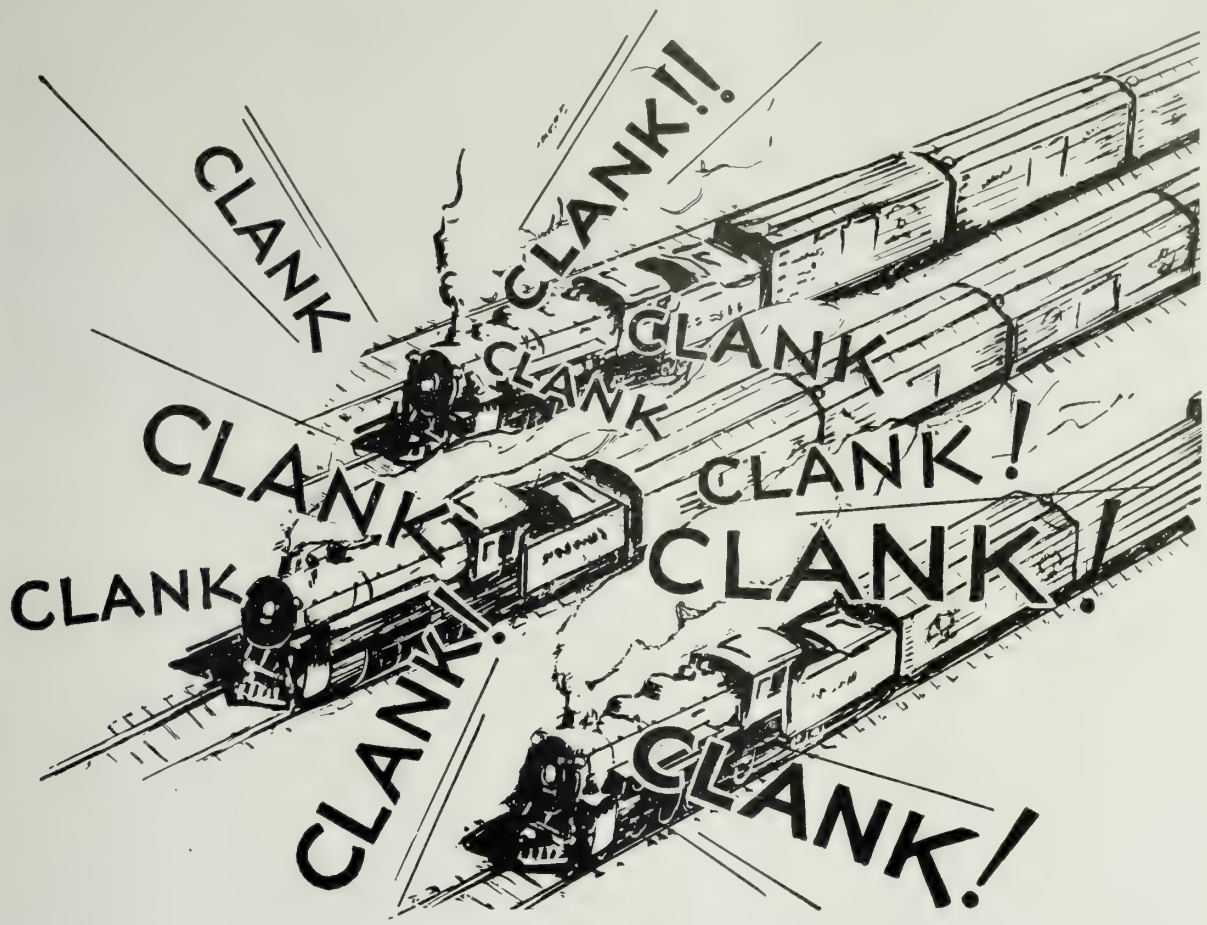
The Union Pacific ordered 25 4-12-2 type and 20 tenders from American; Georgia, Ashburn, Sylvester & Camilla, one 2-8-2 type from Baldwin; Equitable Equipment Co., New Orleans, one 2-8-0 type from American.

Freight Car Orders

According to reports filed by the carriers with the car service division of the A.R.A., Class I railroads on February 15 had 121,744 freight cars in need of repair or 5.5 per cent of the number on line, 3.9 per cent in need of heavy repairs and 1.6 in need of light repairs. This was a decrease of 2,516 cars over the number in need of repair on February 1, at which time there were 124,260 or 5.6 per cent.

The Norfolk & Western is inquiring for bids for the rebuilding of 1000 hoppers; Amiesite Asphalt Co. of America, five flat cars; Bethlehem Chili Iron Mines Co., five ore cars; Butler County Oil Refining Co., 60 tank cars; Canadian Pacific, 50 ore cars; Inland Lime & Stone Co., from 25 to 30 gondolas; Newfoundland Ry., 50 box cars; New Haven, 15 coke cars; Northern Pacific, 250 underframes for stock cars; Union Carbide Co., four steel flat bottom gondolas; White Eagle Oil & Refining Co., 25 tank cars; Youngstown Sheet & Tube Co., 80 gondolas and 12 flat cars. It is reported the Soo Line will build 400 freight cars in its Minneapolis shops. The Pacific Fruit Express is expected to enter the market for 1,500 refrigerator cars.

The American Refrigerator Transit Co. ordered 1000 refrigerator cars from Mt. Vernon Car; Canadian Pacific, 250 coal cars from Canadian Car & Fdy., and 250 refrigerator cars from National Steel Car; General Chemical Co., 15 tank cars from American Car & Fdy.; Louisville & Nashville, 500 gondolas from Pressed Steel Car, 300 hoppers, 250 flats and 500 box cars from Mt. Vernon Car, 250 gondolas from Pullman; Norfolk & Western, 500 box cars from Roanoke shops; North American Car Corpn., 75 tank cars from Pressed Steel Car; Pere Marquette, 25 cabooses from Magor Car; Anglo-Chilean Consolidated Nitrate Corpn., 20 box cars from Magor Car; Calumet & Hecla Consolidated Copper Co., four air-dump cars from Koppel; Rock Island, 50 cabooses from own shops; Eastern Michigan Railways, ten Hart ballast cars from American Car & Fdy.; Fleischmann Transportation Co., one tank car from General American Tank Car; International Railways of Central America, 35 stock cars from Gregg; Missouri Pacific, 20 cabooses from St. Louis Car; Monessen Southwestern, ten gondola bodies from Koppel; National Steel Tube Co., three special flat cars from Greenville Steel Car; Old Hickory



Every CLANK! Is A Danger Signal

LISTEN to the pound as a locomotive with loose wedges goes by and picture the effect on every locomotive part.

The shock and jar from loose wedges soon racks the running gear and creates plenty of work for the roundhouse.

There is only one way of being sure about wedges. Rely on the Franklin Automatic Adjustable Wedge to maintain proper adjustment with every turn of the drivers.

Franklin wedges do away with a difficult shop job and give assurance that wedges will always function properly because the adjustment is automatic and continuous as the locomotive runs.

They are an essential part of the modern, low-maintenance locomotive.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

Chemical Co., one tank car from General American Tank Car; Texas & Pacific, 25 caboose underframes from Pullman; Wagner Quarries Co., two air-dump cars from Koppel. The Rock Island Refining Co. has leased 200 tank cars from General American Car.

Executive & Operating

Resignation of **William J. Hobbs**, vice president of the **Boston & Maine**, after 57 years' service, and the advancement of **William S. Trowbridge**, controller, to the office of vice president, is announced by Thomas Nelson Perkins, acting president. Mr. Hobbs, who is 76 years of age, will have the title of vice president, retired, and will act from time to time in an advisory capacity. **George F. Glacy**, deputy controller, has been appointed controller, succeeding Mr. Trowbridge. Mr. Glacy is 37 years old and started his railroad career as an office boy 22 years ago.

C. E. Green, superintendent of the Missouri division of the **Rock Island Lines** with headquarters at Trenton, Mo., has been appointed assistant to the vice president of operation in charge of labor matters, with headquarters at Chicago. **H. J. Sewell**, superintendent of the Indian Territory division at Shawnee, Okla., succeeds Mr. Green. The Indian Territory division and the Panhandle division have been combined, and **David Vanhecke** appointed superintendent with headquarters at El Reno.

The Pullman Company, Chicago, has appointed **Hale Holden, Jr.**, assistant to the president. **W. M. Camp**, superintendent of the Pullman Company at Atlanta, Ga., has retired after 43 years service. He is succeeded by **F. B. Kemp**, formerly assistant superintendent.

A. E. Lloyd, superintendent of the western division of the **New York Central** with headquarters at Chicago has been appointed assistant to the vice president in charge of operation. **Fred Grundler**, superintendent of the Michigan division with headquarters at Elkhart, Ind., has been transferred to the Illinois division with headquarters at Gibson, Ind., succeeding **E. W. Brown**, transferred to the Toledo division, with headquarters at Toledo. Mr. Brown succeeds **W. P. Lamb**, transferred to the western division with headquarters in Chicago.

S. E. Cotter, vice president in charge of operation of the **Wabash** with headquarters at St. Louis has also been elected vice president of the **Ann Arbor**.

F. H. Dierks, general manager of the **De Queen & Eastern** and the **Texas Oklahoma & Eastern** with headquarters at Kansas City, has also been elected president of the De Queen & Eastern.

J. N. Brand, general manager of the **Atlantic Coast Line** with headquarters at Wilmington, N. C., has also been appointed general manager of the **Charleston & Western Carolina**.

Leslie B. McDonald, assistant general manager of the Texas lines of the **Southern Pacific**, has been appointed general manager of those lines, with headquarters at Houston. Mr. McDonald has been connected with the Texas lines of the Southern Pacific for almost 28 years. **A. D. Mims**, superintendent of the Houston division with headquarters at San Antonio, has been appointed assistant general manager of the lines in Texas, with headquarters at Houston. **Thomas Scott**, assistant superintendent with headquarters at Ennis, Tex., has been appointed superintendent of the Victoria division with headquarters at Victoria, Tex., succeeding **G. B. Goodloe**, transferred to the Houston division with headquarters at San Antonio.

E. W. Fowler, inspector of transportation of the **Chicago Great Western** at Chicago has been appointed assistant general superintendent of transportation, with headquarters at Oelwein, Iowa. The position of inspector of transportation has been abolished. The northern and western divisions have been combined into the Minnesota division, and **C. J. Kavanagh**, former superintendent of the northern division has been appointed superintendent of the Minnesota division with headquarters as before at St. Paul. The eastern division and the Oelwein terminal have been combined into the Illinois division. **S. V. Rowland**, former superintendent of the eastern division at Chicago, has been appointed superintendent of the Illinois division with headquarters at Oelwein. The position of terminal superintendent at Oelwein has been abolished.

W. C. Griffin has been appointed district manager of the car service division of the **American Railway Assn.**, at Birmingham succeeding **R. W. Edwards**, transferred to Dallas. Mr. Edwards succeeds **Robert C. Andrews**, deceased.

The Baltimore & Ohio announces that **William M. Kennedy**, assistant superintendent since 1918, of the relief department and the company's pension feature, has been appointed superintendent, succeeding **W. J. Dudley**, deceased. **Dr. E. V. Milholland** will have direct charge of medical and surgical services.

P. S. Lewis, superintendent of the **Atlantic City** with headquarters at Camden, N. J. has been appointed superintendent of the New York division of the **Reading** with headquarters at Philadelphia.

U. W. Edmonds, trainmaster of the Peoria division of the **Nickel Plate** has been appointed superintendent of that division with headquarters as before at La Fayette, Ind., succeeding **J. W. O'Brien**, deceased.

Financial & Legal

William R. Sievers, auditor of disbursements of the **Chicago Great Western** with headquarters in Chicago, has been appointed general auditor. Mr. Sievers has been engaged in railroad work for 32 years, all but ten of which have been with the Chicago Great Western. He began railroad work with the C. B. & Q. in Omaha in 1902.

E. L. Ray, special accountant of the **Nickel Plate** with headquarters at Cleveland has been appointed acting auditor of the **Detroit & Toledo Shore Line** with headquarters at Toledo.

Traffic

F. L. Glover, assistant to freight traffic manager of the **Atlantic Coast Line**, and **J. B. Brantly**, assistant general freight agent, both with headquarters at Wilmington, have been appointed assistants to the vice president with the same headquarters. Other changes in personnel are: **J. F. Mead**, general freight agent with headquarters at Jacksonville, Fla. has been appointed assistant freight traffic manager; **C. L. Hinnant** and **W. H. Henderson**, assistant general freight agents have been appointed general freight agents, succeeding **R. J. Doss** and **W. C. Ragin**, appointed assistant freight traffic managers; **E. M. Finch, E. C. Hicks, Jr., F. E. McKenzie, L. A. Kienzle**, and **L. L. Doss**, have been appointed general freight agents, all with headquarters at Wilmington, N. C.

R. J. Foreman, general foreign freight agent of the **Canadian National** has been appointed traffic manager of the foreign freight department with headquarters as before at Montreal.

G. B. Davis has been appointed assistant to the vice president in charge of traffic of the **Frisco**, with headquarters at St. Louis.

J. E. Anderson, general freight agent of the **Big Four** has been appointed traffic manager with headquarters as before at Cincinnati. **H. E. Carson**, assistant general passenger agent of the **Michigan Central** at Chicago, has been appointed general passenger agent of the **Big Four** with headquarters at St. Louis. **B. R. Brenan**, assistant general freight agent with headquarters at Cleveland, has been appointed general freight agent with headquarters at Cincinnati. **J. W. Gardner**, assistant general passenger agent at St. Louis, has been transferred to Cincinnati.

The Chicago Great Western announces that **M. E. Keehan**, assistant

SHOP EXTENSIONS *at Huntington* FOR THE C. & O.

FOR the Chesapeake & Ohio Railway we have just completed the construction of large shop extensions at Huntington, W. Va., from plans prepared by the client's engineering department, Mr. C. W. Johns, Chief Engineer.

The work included large buildings to house the Pipe and Tin Shop, Erecting Shop, Wheel Shop, Heavy Machine Shop, Light Machine Shop and Mallet Shop; Boiler House Extension, auxiliary buildings, platforms, transfer tables, etc.

The shops were built in five principal steps on the site of the old shops, which were kept in operation. As the new facilities were completed—a step at a time—the old shops were removed and equipment and repair work transferred to the new buildings.

During the construction period locomotive repairs in the Huntington Shops proceeded as usual, in normal volume and at normal cost.

The work is an example of close cooperation with the engineering and operating departments of the Chesapeake & Ohio Railway.

UNITED ENGINEERS & CONSTRUCTORS, INC

Design and Construct

SHOPS
LOCOMOTIVE TERMINALS
PASSENGER TERMINALS
POWER PLANTS
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FREIGHT STATIONS
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UNITED ENGINEERS & CONSTRUCTORS

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LOS ANGELES MONTREAL BUENOS AIRES RIO DE JANEIRO

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

controller, with headquarters at Chicago has been appointed freight claim agent, succeeding **C. F. Carlson,** deceased.

A. C. McIntyre, general freight agent of the **Lehigh Valley,** and **M. J. Ormond,** general eastern freight agent, have been appointed assistant freight traffic managers with headquarters at New York. **E. F. Neagle,** assistant general freight agent, industrial development, has been appointed general development agent; **F. H. Moser,** coal freight agent has been appointed coal freight traffic manager; **T. A. Harahan,** assistant coal freight agent, succeeds Mr. Moser. All will have headquarters at New York.

The American Short Line Railroad Assn. has appointed **E. W. Dozier** assistant traffic manager with headquarters at Chicago.

The headquarters of **J. H. Wilson,** general live stock agent of the **Missouri-Kansas-Texas** lines has been moved from Parsons, Kan. to Fort Worth, Tex., and the position at Parsons abolished. Mr. Wilson will have charge of the lines in Texas, succeeding **W. V. Galbreath,** retired.

N. L. Callens has been appointed assistant general freight agent of the **Chicago Rock Island & Gulf** with headquarters at Forth Worth.

P. B. McAtee, assistant general freight and passenger agent of the **Denver & Rio Grande Western** with headquarters at Durango, Colo., retired March 1.

Mechanical

The following promotions and appointments on the **Pennsylvania** became effective March 1: **R. H. Flinn,** general superintendent of motive power, central region, has been appointed general superintendent, Western Pennsylvania division with headquarters at Pittsburgh, succeeding **J. H. Redding,** deceased. Mr. Flinn was born in Camden, N. J., March 8, 1887, is a graduate of Cornell University, and entered the railroad service as a car builder apprentice in the Pavonia Shops, Camden, in 1901. **H. W. Jones,** superintendent of motive power, Western Pennsylvania division, succeeds Mr. Flynn. Mr. Jones was born in Northumberland, Pa., December 30, 1884. He entered the service of the Pennsylvania as machinist apprentice in the Sunbury Shops in 1903. **B. M. Swope,** superintendent of motive power, Central Pennsylvania division, succeeds Mr. Jones. Mr. Swope was born in Altoona, June 13, 1885, and is a graduate of Lehigh University. He entered the employ of the Pennsylvania in 1908 as a special apprentice in the Altoona Shops. **A. W. Byron,** master mechanic, Philadelphia terminal division, succeeds Mr. Swope. Mr. Byron was born in Buffalo, January 3, 1880, and entered the service of the company as a draftsman in the Buffalo Shops.

W. C. Marshall, engineer of train lighting of the **Milwaukee** has been appointed assistant to the superintendent of motive power with headquarters as before at Milwaukee. **C. E. Wood,** air brake and electrical supervisor with headquarters at Tacoma, succeeds Mr. Marshall.

W. T. Westall, district master car builder of the **New York Central Lines** with headquarters at Collinwood, Ohio, has been appointed special assistant superintendent of rolling stock, of the lines west of Buffalo, with headquarters at Cleveland.

D. E. Barton, formerly superintendent of shops at Albuquerque is now mechanical inspector for the **Santa Fe** with the same headquarters.

Richard Kling has been appointed master mechanic of the **Missouri-Illinois** with headquarters at Boone Terre, Mo.

THE LAST HUNDRED YEARS

HAVE proved very convincingly the superior wear resisting qualities of

HUNT-SPILLER
Air Furnace GUN IRON

THE PAST TEN YEARS

WITH heavier power and longer locomotive runs have demonstrated more and more the necessity of using Hunt-Spiller Iron for the wearing parts of your engines.

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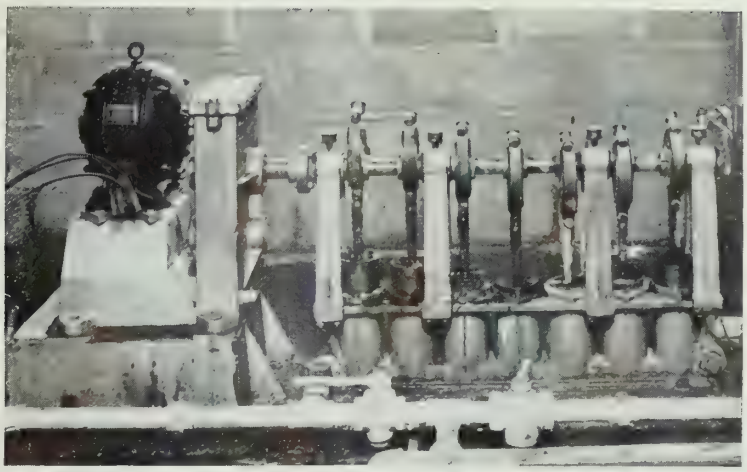
Announcing

Snowco VALVELESS Chemical Pump



WILL Handle Lime - Soda Ash Solutions at a Constant Rate.

WILL Pump Sludge From Treating Tanks Through Filter Press to Give a Hard Dry Cake Easy to Handle.

T. W. SNOW CONSTRUCTION CO.

332 SO. LA SALLE ST. CHICAGO

The headquarters of **F. B. Barclay**, superintendent of motive power of the **Illinois Central** has been transferred from Memphis to Chicago.

Civil

W. D. Williams, engineer maintenance of way of the **Cincinnati Northern** has been appointed division engineer of the northern division of the **Big Four** with headquarters as before at Van Wert, Ohio. **W. H. Miesse**, engineer maintenance of way of the **Evansville Indianapolis & Terre Haute** has been appointed division engineer of the Terre Haute division of the **Big Four** with headquarters at Washington, Ind.

P. D. Fitzpatrick, chief engineer of the **Central Vermont** with headquarters at St. Albans, Vt., has been appointed assistant engineer of the **Canadian National** in charge of construction of the Montreal terminal.

D. B. Packard, principal assistant engineer of the **Atlantic Coast Line** with headquarters at Wilmington, N. C., has been appointed chief engineer, succeeding **D. W. Gross**, deceased.

T. W. Fatherson, superintendent of the western division of the **Chicago Great Western** with headquarters at Clarion, Iowa, has been appointed engineer maintenance of way with headquarters at Oelwein, Iowa.

J. G. Sheldrick, resident engineer of the **Soo Line** has been appointed engineer maintenance of way, with headquarters as before at Minneapolis. **W. H. Stedji**, division engineer with headquarters at Superior, Wis., has been appointed resident engineer with headquarters at Minneapolis. **S. P. Berg**, assistant engineer at Minneapolis has been appointed division engineer with the same headquarters, succeeding **A. Birdsell**, transferred to Superior to replace Mr. Stedji. **E. M. Northensco'd**, assistant engineer at Fond du Lac, Wis., has been appointed division engineer with headquarters at Gladstone, Mich.

J. A. Handley has been appointed assistant engineer of the **Louisville & Nashville** with headquarters at Paris, Ky. succeeding **A. A. Pogue**, appointed track supervisor, succeeding **Thomas Keller**, retired.

M. Donahue, general supervisor of maintenance of the **Chicago & Alton** with headquarters at Chicago has been appointed general roadmaster with jurisdiction confined to maintenance of roadway.

A. L. Atwill, assistant engineer of the **Chicago & Western Indiana** with headquarters at Chicago has been appointed valuation engineer with the same headquarters. **Frank E. Beutler**, acting signal engineer with headquarters at Chicago has been appointed signal engineer. **George C. Hughel**, assistant engineer, construction department, has been appointed office engineer with headquarters as before at Chicago.

E. H. Looker, assistant engineer of the **Big Four** at Bellefontaine, Ohio, has been appointed assistant engineer maintenance of way of the **Peoria & Eastern** with headquarters at Indianapolis.

Obituary

M. E. Montgomery, for many years assistant grand chief engineer of the International Brotherhood of Locomotive Engineers, died at his home in San Jose, Cal., March 9, aged 67.

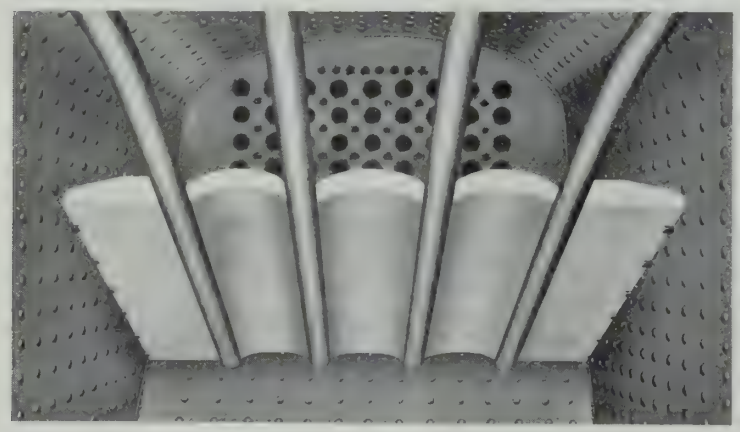
James D. Cowan, secre ary and treasurer of the National Lock Washer Co., Newark, N. J., died February 6, in Summit, N. J., aged 42.

Harry Ainsworth, president of Williams, White & Co., Moline, Ill., died February 6.

E. C. Fisher, district sales manager of the American Locomotive Co. with headquarters at St. Louis, died at Rochester, Minn., February 17, aged 55.

Winfield S. Cooper, assistant to the general manager of the Milwaukee, died at his home in Chicago, February 10, aged 68.

Alexander Steele Lyman, general attorney for the New York Central died March 7 at his home in Mamaroneck,



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THE NEWEST THING in ARCHES

The Economy Baffle Wall

It lowers your operating costs by improving combustion, reducing the maintenance cost of your brick and eliminating the straightening or replacing of bent arch tubes. It's not just the brick that makes the difference it's the method of application.

Economy Arch Company

Railway Exchange Bldg. St. Louis, Mo.

IS THE AUTOMATIC CONNECTOR AN EXPERIMENT?

THE AMERICAN AUTOMATIC CONNECTOR, built on scientific principles and the result of many years of development work, has been in actual service for years on American railroads, under the most exacting conditions.

It has a record of over ten years of continuous and satisfactory service behind it.

Ask us for details.

THE CONSOLIDATED CONNECTOR CORPN.

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The FAIR Rail Anti Creeper

Satisfactory Under All Conditions

THE P. & M. CO.

Chicago New York
Montreal London Paris
Calcutta Sydney

N. Y., aged 70. Mr. Lyman was associated with the New York Central for more than 25 years. He was born in New Orleans, and was graduated from New York University in 1884. He received his law degree from Columbia in 1886.

Harry D. Hammond

Harry D. Hammond, vice president of the American Steel Foundries, died March 1, following an operation. Mr. Hammond was born at Upland, Pa. in 1886. After spending four years in the offices of Robert Wetherill & Co. at Chester, Pa., he started his career in 1906 with the American Steel Foundries at its Thurlow, Pennsylvania Works. He was transferred to the Pittsburgh Sales Office in 1910, and three years later was appointed production engineer of the Indiana Harbor Works. In 1915 Mr. Hammond was appointed manager of miscellaneous sales at the Chicago office which position he held until March, 1929, when he was elected vice president.

Frederic G. Ranney, retired treasurer of the Milwaukee, died in Chicago, February 11, age 88.

Samuel G. Strickland, retired general manager of the Chicago & North Western, died at Marine, Minn., February 19, aged 71.

Oliver B. Barrows, representative of the American Steel & Wire Co. at St. Louis, died in that city, February 25.

C. F. Carlson, freight claim agent of the Chicago Great Western, died at the American Hospital in Chicago, February 17.

H. Isaacs, assistant general baggage agent of the Coast lines of the Santa Fe, died in Los Angeles, February 24. Mr. Isaacs had been in the service of the Santa Fe for 48 years.

P. O. Wood, assistant superintendent of motive power of the St. Louis-San Francisco, died at Springfield, Mo., February 20, aged 53. Mr. Wood was a native of Memphis, Tenn., and had been in the service of the Frisco for 36 years.

J. H. Weisbrod, assistant vice president of the American Car & Foundry Co., died unexpectedly at his home in Brooklyn, N. Y., March 6, aged 50. Mr. Weisbrod had been in the service of the company for 30 years. Starting as draftsman and estimator in the mechanical division, western department at St. Louis, he succeeded to the office of mechanical engineer. In January, 1918, he was transferred to the New York office as assistant to the general manager. He was appointed assistant vice president in December, 1923.

Supply Trade Notes

L. L. King, electrical engineer of the **Santa Fe** has resigned to become sales engineer of the **Okonite Company,** manufacturers of insulated wires and cables, with headquarters in Chicago. Mr. King was graduated in 1909 as an electrical engineer from the Kansas State Agricultural College, Manhattan, Kan., immediately putting his training into practice in the signal department of the Pennsylvania Railroad. He started with the Santa Fe as an assistant electrical engineer in 1916, and in 1923 became electrical engineer of the system.

Walter C. Doering, vice president of the **Bradford Corpn.,** Chicago, has resigned to become vice president of the **American Steel Foundries** with headquarters at St. Louis. **A. A. Helwig,** southwestern representative of the Bradford Corpn. at St. Louis has been appointed acting vice president succeeding Mr. Doering. **B. C. Wilkerson** succeeds Mr. Helwig.

Joseph Davis, vice president and controller of the **American Locomotive Co.,** New York, has been appointed executive vice president. **F. Pierce Brent,** assistant controller has been appointed controller.

Oliver H. Mellum has been appointed assistant vice president of the **American Car & Foundry Co.** with headquarters in Chicago.

John S. Lemley, former vice president of the **Viloco Railway Equipment Co.** and the **Okadee Co.,** Chicago, and of the **Chas. R. Long, Jr. Co.,** Louisville, has resigned from these companies and has bought an interest in the **T-Z Railway Equipment Co.,** Chicago, and has been elected vice president.

Arthur G. Johnson has been elected president of the **Armspear Mfg. Co.,** New York. **C. K. Freeman** has been elected assistant to the president and secretary; **J. S. Pixley,** vice president and treasurer.

Albert E. Ferguson, general sales

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SOUTHERN PACIFIC

manager of the **National Lumber & Creosoting Co.** has been elected vice president and member of the board.

E. R. Norris, general works manager of the **Westinghouse Electric & Mfg. Co.** has been appointed assistant to the vice president. Mr. Norris has been associated with the Westinghouse Co. since 1892.

Leonard Perez, assistant tie and timber agent of the **Missouri-Pacific** has resigned to join the **National Lumber & Creosoting Co.** as district sales manager, St. Louis district, with headquarters in the Telephone building, St. Louis.

The name of the **Cut-Off & Speed Recorder Corpn.**, 230 Park avenue, New York, has been changed to **Valve Pilot Corpn.** In its announcement the corporation states that the change was made so as to associate the company's name more clearly with its product.

The Buda Company has appointed **Sidney B. Grant** sales representative in the eastern territory, covering New York, New Jersey and Delaware. Mr. Grant's headquarters will be at the New York office, 30 Church street. **R. F. Tannehill** who has been in the service of the **Union Pacific** for 14 years, with the exception of army service during the World War, has joined the **Buda Company**, with headquarters in Chicago.

The Reading Chain & Block Corpn. has appointed the **E. E. Newhall Co.** of 381 Brannon street, San Francisco its representative in northern California. Due to increased business, **W. C. Minier** and **F. C. Lorenz**, have been added to the sales and engineering staff of the Cleveland office.

F. H. Lovell & Co., and the **Dressel Railway Lamp & Signal Co.**, of Arlington, N. J., have merged under the name of the **Lovell-Dressel Co., Inc.**, with general offices and plant at Arlington. This will incorporate under one management the manufacture of a specialized lighting equipment used in almost every branch of transportation.

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Transportation

(Reg. U. S. Patent Office)

The National Monthly
of the Transportation Industry

Vol. VI

No. 4

FEATURES *for April,* 1930

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Our Anniversaries and Meetings

ONE OF THE burdens of chambers of commerce and editorial staffs is that of looking after our anniversaries, of which we have almost as many as there are holidays in Mexico. Every now and then one more of these joyous occasions bobs up, discovered in history, and brought proudly to public attention; and usually it is something everyone has forgotten.

We shall have with us Thursday, April 10, the beginning of a celebration that is to continue, at St. Louis, until next December: the one hundredth anniversary of the first covered wagon leaving that city for the perilous journey to the Far West. Martha Moore has written a story about it for this issue.

All over the land, starting Saturday, April 5, engineers will be holding meetings in commemoration of the founding of the original American Society of Mechanical Engineers. This interesting event took place 50 years ago at Hoboken.

The National Association of Railroad Tie Producers is to meet April 29-May 1, at the Peabody Hotel, Memphis. And of course you are getting ready for the meeting, May 6-9, of the International Railway Fuel Association, at the Hotel Sherman, Chicago. The Supply Men's Association meets at the same time and place.

The International Railway Congress meets May 5-15 at Madrid, Spain. Perhaps you're going. Remember the last congress at London in 1925?

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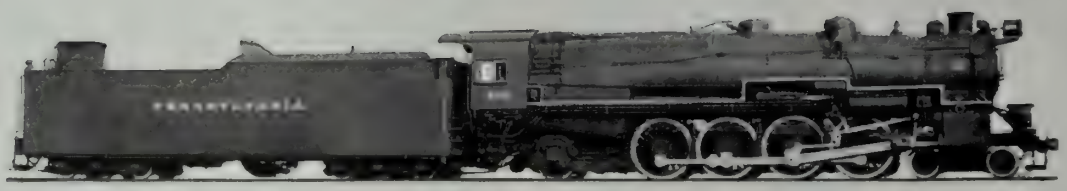

LIMA Locomotive Works is delivering 25 Mountain Type Locomotives to the Pennsylvania Railroad. This type of locomotive has proved its effectiveness over a period of years under the operating conditions prevailing on this railroad.

LIMA LOCOMOTIVE WORKS INCORPORATED

Photo by Ewing Galloway, New York.

One Hundred Years Ago, April 10, 1830, the First Covered Wagon Left St. Louis for the Golden West.

A Covered Wagon Epic of 1830

St. Louis, the Starting Point, Celebrates a Memorable Journey

By Martha Moore

On the afternoon of April 10, 1830, which, as any statistician will assure you, was just 100 years ago, the Smith-Sublette-Jackson fur trading expedition of 81 men with their weapons, mules and cattle, started westward from St. Louis on the 2,000-mile journey to Oregon. This was the first of thousands of such wagon trains to travel the historic trail in after years, forerunners of the nation's transportation system then just beginning to struggle into activity in the eastern states.

In 1830 engineers were surveying the proposed route of the Baltimore & Ohio Railroad, the "first stone" of which had been laid two years previously. In May, that same year, the first horse-drawn car began its daily trips between Mount Claire and Ellicott Mills, for locomotives had not yet been used in this country.

In the Congressional Library at Washington is a letter sent to the secretary of war, John H. Eaton, by the three trappers upon their return to St. Louis in October, 1830. You get a fine contrast in transportation and speed of those days and our own when you read this letter, and think of how we scoot about over the country today.

"On April 10 last," says the writer, "a caravan of ten wagons drawn by five mules each and two Dearborns drawn by one mule each, set out from St. Louis. We had 81 men in the company, all mounted on mules. Our route from St. Louis was nearly due west to the western limits of the state, thence along the Santa Fe Trail about 40 miles from which the course was some degrees north of west across the waters of the Kansas, and up the Great Platte River to the Rocky Mountains, and to the head of the Wind River, where it issues from the mountains. This took us until July 16, and was as far as we wished the wagons to go, as the furs to be brought in were collected at this place. Here the wagons could easily have crossed the Rocky Mountains, it being what is called the Southern Pass, had it been desirable for them to do so.

"For our support, at leaving the Missouri settlements, until we could get into the buffalo country, we drove 12 head of cattle, besides a milk cow. We began to fall in with the buffalos on the Platte about 350 miles from the white settlements, and from that time lived on buffalo meat.

"On August 4, the wagons in the meantime being loaded with furs, we set out on the return to St. Louis, our route back being over the same route previously traversed. We arrived in St. Louis on October 10, bringing back the ten wagons, the Dearborns being left behind; four of the oxen and the milk cow we also brought back to the settlements in Missouri. Our men were all healthy; we suffered nothing from the Indians and had no accident but the death of one man, being buried under a bank of earth that fell on him. The usual progress of the wagons was from 15 to 25 miles a day."

St. Louis, very properly, is celebrating this epic in transportation. Under the direction of E. D. Nims, president of the Southwestern Bell Telephone Co., and St. Louis representative on the board of governors of the Oregon Trail Memorial Association, the city is assured of a colorful pageant re-enacting scenes of frontier days. Boy Scouts, members of the local Oregon Trail Centennial Committee and descendants of pioneer families, will have prominent parts on the program. Frontiersmen in leather jackets and squirrel caps, on foot, on horseback and in mule-drawn covered wagons will form a colorful procession. To complete the picture, spectators will be dressed in costumes of frontier days.

The cavalcade will assemble at the old court house, Fourth and Market streets, where moving pictures will be made. Then it will move westward, bearing a message from Governor Caulfield of Missouri to Governor Patterson of Oregon. The message, however, will be transferred to a more modern vehicle. An airplane, traversing in a few hours distances it took the wagon train months to cover, will carry the message along the route of the Oregon Trail, delivering it to Governor Patterson at Salem, Oregon.

Equally colorful will be the pioneer dinner, to be given at the Coronado hotel. Plans are being made to transform one of the dining rooms into a dining hall of frontier days. Walls will be hung with furs, tables will be of rough wood and menus printed on small skins. The meal will be served by negro women in the costume of the time. Members of patriotic and historic societies, private and civic organizations have been invited to the dinner, and special effort has been made to find and invite descendants of those who lived in St Louis during the period. Nearly two hundred St. Louisans who are descendants of early pioneers have been traced.

Eight governors have been invited to attend and speak at the pioneer dinner. The last includes governors of states through which the first wagon train traveled: Missouri, Kansas, Nebraska, Wyoming, Montana, Idaho and Washington, before reaching Oregon. President Hoover, who has issued a proclamation naming the period from April 10 to December 29 to commemorate the hundredth anniversary of the event, probably will address the pioneer dinner guests by radio.

Other celebrations will be held throughout the year. On the Fourth of July there will be a great migration of Boy Scouts to Independence Rock, Wyoming, where covered wagon days will be lived again in a huge encampment. Independence Rock has been chosen as the site because it was there on a great plain where a rocky mound juts forward the old travelers over the trail met for rest. The rock was known as the Trail Register and contains names and addresses of many of the old time pioneers. Suitable markers will be placed at important points on the trail, as finances permit.

(Continued on Page 48)

Photo by Ewing Galloway, New York.

Rumors That Gold Had Been Found in California Split the Wagon Train. The Right Wing Adhered to the Original Plan to Seek Land in the Northwest; the Others Took the Shortest Cut to the Sacramento Valley.

Architect's Conception of the Union Terminal Now Under Construction at Cincinnati, to Cost $41,000,000.

This Station to Cost 41 Millions

Cincinnati's Terminal, Now Building, to be Ready in January, 1934

By Maurice Schapiro

HERCULES cleaning the Augean stables had a soft job compared with that of Col. Henry M. Waite, chief engineer of the Cincinnati Union Terminal Co. and his 500 men now placing 5,500,000 cubic yards of filling for Cincinnati's Union Terminal. Winston Brothers Co., contractors, began work on the $41,000,000 terminal August 15, 1929, and it is expected to be completed by January 1, 1934.

The Cincinnati Union Terminal Co. is owned jointly by seven participating railroads, the Baltimore & Ohio, the Chesapeake & Ohio, the New York Central (Big Four Lines), the Louisville & Nashville, the Norfolk & Western, the Pennsylvania and the Southern (Cincinnati, New Orleans & Texas Pacific).

The terminal plan includes not only a passenger station, but also an engine terminal, a coach servicing yard, and express and mail terminals. It will provide complete passenger terminal facilities for all the railroads entering Cincinnati and supplant the present Central Union, Pennsylvania, Court Street, Cheasapeake & Ohio and Baltimore & Ohio Baymiller Street Stations.

The new station will have an immediate daily capacity of 105 trains inbound and a like number outbound with provision for considerable expansion. The terminal project covers 320 acres and involves the construction of 94 miles of tracks, moving 54 miles of existing tracks, placing 160,000 cubic yards of concrete, 400,000 linear feet of concrete piling and 22,000 tons of structural steel, not including that required in the station buildings.

The contractors are now concentrating on the reduction of Bald Knob, a hill jutting out in Fairmount, a suburb of the city. Four hundred dumping cars of dirt are now being moved daily from the knob to the terminal site about a mile east of the hill. It is expected to take three and one-half years to raise the ground level of Mill Creek Valley to an average of 12 to 15 feet so that all tracks will be above flood levels reached in years past by the Ohio River and Mill Creek.

All the railroads except the Pennsylvania and the Norfolk & Western will make direct connection with the terminal tracks over their own rails or routes for which they have had trackage rights for many years. The Norfolk & Western will enter the terminal from the north over one of the four main tracks of the Baltimore & Ohio which skirt the western end of the new terminal coach yard and enter the northern throat of the station layout. The Pennsylvania which also enters Cincinnati on the east along the Ohio River will use the Baltimore & Ohio tracks from East Norwood to the Union Station proper. The Norfolk & Western will use a portion of the Richmond division tracks of the Pennsylvania from East Norwood to Clare to reach its main line.

The site of the new terminal runs for about two miles along the east side of Mill Creek from a point near where it pours into the Ohio River. The station headhouse facing Lincoln Park will be approximately one mile and a half west of Fountain Square, the business center of Cincinnati. A new Central Parkway, recently completed, will be linked to an adequate approach for the new station making it only 10 to 15 minutes by taxicab from the central downtown shopping district.

The terminal tracks will cover a space only 800 feet wide but replace-

ment of existing railway facilities cause actual construction operations to cover 1600 feet width for the two-mile length of the project.

At present all Cincinnati stations are stub-end in construction but the new union station will be of the through type. Trains will enter the terminal from the north via the Baltimore & Ohio, New York Central, Pennsylvania and Norfolk & Western and the Chesapeake & Ohio of Indiana, and from the south via the Louisville & Nashville, the Southern, the New York Central lines from the west, the Chesapeake & Ohio and the Baltimore & Ohio trains from the west. The Southern will make direct contact from the end of its bridge across the Ohio River; the Chesapeake & Ohio and Louisville & Nashville will have access over the terminal company tracks from the end of the new Chesapeake & Ohio bridge. A connection to the west from Storr's station will provide for the St. Louis line of the Baltimore & Ohio and the Chicago line of the New York Central. A direct connection will be made at the north end of the terminal with the Baltimore & Ohio line to the east. It will serve not only that road from the north and east but also, as already pointed out, the Pennsylvania and Norfolk & Western. The Chesapeake & Ohio of Indiana will enter the terminal by means of a viaduct across the Mill Creek Valley from the west for which footings are now being placed near the center of the station layout.

The station floor will be 22 feet above the tracks. A concourse will span the tracks and the platforms on the transverse axis of the layout. This two level type station has many features that do not conform in details to any other existing passenger terminal chiefly because of the topographical problems met. There is a complete segregation of incoming and outgoing passengers, and more direct means of access for all forms of street transportation than in any other existing terminal. Colonel Waite has taken pains to eliminate any interference of private automobiles, street cars, motor coaches, taxicabs and baggage trucks with one another. Each will enter and leave the station without occasion for any cross movements with any other class of vehicles.

The axis of the station will conform to the east and west center line of Lincoln Park, which is 500 feet wide by 700 feet long. This park area is about 500 feet east of the street front of the new Union Station. Purchase of land lying between the park and the station enables the terminal company to extend this park to the station door. A Southern Railway freight house now covers much of the ground between Lincoln Park and the new station front elevation.

The parkway approach to the station will be graded to provide a gradual slope rising from the east so that the plaza will be 35 feet higher than streets adjoining. This will result in focusing attention of passersby on the new station building. Its main feature will be a central mass having an eastern elevation facing the business district of Cincinnati in the form of a great semi-circular arch flanked by arcades which will serve as the principal entrances and exits for the new station.

Approaching the station from downtown will be two broad driveways, one for eastbound and one for westbound traffic only. Private automobiles will turn into the plaza at the east front of the station to pick up or leave passengers. Taxicabs and buses will turn to the right on approaching the station so as to reach the north arcade entrance. Here they will join the street cars which will approach the station on a track occupying the street flanking the north side of the parkway.

Landing platforms for passengers using any vehicle will be sheltered by the arcade. The landing platforms will divide traffic into three lanes for street cars, motor coaches and taxicabs. Near the outer end of the arcade both roadways and platforms will be considerably below the station floor level in elevation but on approaching the central body of the station, grades of the platforms and roadways will separate. The platforms will serve as ascending ramps to the station floor level and the roadways will descend so that street cars, motor coaches and taxicabs after unloading may pass under the station concourse and emerge in the south arcade to receive passengers ready to leave the station.

On going up the ramps the passengers will enter a central concourse, almost semi-circular, 170 feet wide north and south by 140 feet deep east and west. A great half-dome ceiling will rise 110 feet above the floor. Windows of large area will light the concourse. These windows will occupy wall space under the huge arch that forms the principal architectural feature of the eastern or front elevation. On the west of this concourse a large arched opening will afford direct connection with a second concourse 580 feet long by 80 feet wide. It will have a barrel-vault ceiling. This second concourse is to be constructed over the station tracks. It will serve both as a train concourse and a general waiting room. Its doors in the north and south walls will connect with stairs and ramps leading to and from train platforms.

Auxiliary service facilities will be found on either side of the massive entrance concourse. Since outbound passengers will be for the most part on the north and inbound passengers on the south, the inbound facilities such as the ticket offices, baggage checking counters and the like will be on the north and the parcel post check room, restaurants and toilets will be on the south. Mail, baggage and express will move to and from track platforms by elevators at each end of the platforms. They will connect with tunnels under the tracks which will have portals east of the tracks connecting with a north and south runway. This will not only extend as far as the baggage room but will also reach express buildings and a $700,000 United States post office just authorized by the postmaster general. These auxiliary buildings will be built with frontage on low level streets north of the station building. Street vehicles handling baggage, mail and express will have a direct connection with tail-board space at the level of those facilities without interfering with mass transportation of passengers to and from the station.

Present plans call for 14 tracks arranged to serve seven platforms 1600 feet in length. Colonel Waite estimates these will care for 35 trains an hour. Addition of eight tracks is provided for by additional space allowed for in the plan. Stub tracks for parking of locomotives, diners, sleepers and the like will be built between ends of four of the platforms and the two station track layout throats. A large coach yard with a service building having a street frontage, tracks for mail and express cars with platforms communicating with their respective buildings, and a complete engine terminal with a 35-stall enginehouse will be on the east, or city side of the layout, and the main line will be along the west side.

Harry A. Worcester, recently elected vice president of the New York Central Lines, for several years vice president of the Big Four, is president of the Cincinnati Union Terminal Co. and Robert A. Taft, son of former President Taft, is secretary. Col. Henry M. Waite, former city manager of Dayton, is chief engineer, and Felheimer & Wagner, New York, are the architects.

The Railways Work For the Tax Collectors

By

Lee G. Lauck

In the Canadian Rockies on the Canadian Pacific Railway.

EVERYONE who purchases railway service pays a share of the taxes levied upon the railroads, and as a consequence railway rates, other things being equal, must or should rise as taxes increase.

In spite of all that has been said about this situation, not very much seems to have been done about it. The difficulty may be that every owner of real or personal property is sufficiently worried about meeting his own ever-increasing tax bills and is perfectly satisfied that the railways should worry, too. The railways indeed have reason to worry.

The Class 1 railways paid out in 1929 more than $402,630,000 in direct taxes, or $3.35 for every man, woman and child in the United States. Their direct taxes absorbed 6.3 per cent of their total receipts. Expressed in the simplest language, every person who paid a dollar to the railroads in 1929 for freight or passenger service paid 6.3 cents indirectly in taxes.

The taxes the railroads are required to pass on to their patrons, however, do not end with their direct taxes of $402,630,000. Like every other consumer, the railroads pay indirect taxes, and these become, still more indirectly, taxes upon their patrons. Expenditures of the railroads for fuel, oil, iron, steel, lumber and manufactured products must cover also the taxes levied upon the producers of those commodities.

It is estimated that in 1929 the Class I railways spent about $1,260,000,000 for fuel, materials and supplies used in railway operations, in addition to large sums spent for materials and supplies used in improving and adding to railway facilities. If it is true, as has been estimated, that one dollar out of every six spent by the consumer goes to pay taxes, then the $1,260,000,000 which the railways spent as consumers of fuel, materials and supplies included over $210,000,000 for indirect taxes.

Individuals pay both direct and indirect taxes. These taxes form part of their living costs, and the cost of living in turn helps to determine the amount of compensation paid to the railway employes. The railroads paid out in 1929 about $2,937,000,000 for labor in railway operation, in addition to labor employed in making addition and betterments to railway facilities. A part of that $2,937,000,000 expenditure went to cover the taxes which originally were taken out of the pockets of individuals and concerns engaged in supplying the requirements of the railroads' 1,687,000 employes.

The railroads have no means by which to raise money except by selling service, and borrowing. The payer of railway rates, therefore, is the one who pays the railroads' direct and indirect taxes.

Railway operating revenues in 1929 were over $6,352,355,000, and operating expenses were about $4,553,696,000, leaving a net operating revenue from 241,854 miles of railway line amounting to $1,798,386,000. Taxes amounted to about 23 per cent of this total. Applying this percentage to the mileage operated it is seen that railway taxes were equivalent last year to the net revenue earned by 55,626 average miles of railway.

In other words, these 55,626 miles might as well have been working for the tax collector as far as railway

earnings from them were concerned. The corresponding totals were 25,000 miles of line in 1911, 29,000 miles in 1916, 57,000 miles of line in 1927, and 55,256 in 1928.

The growth in taxation is alarming. It has increased steadily in the past eighteen years, from a total of $98,626,848 in 1911, to $402,630,000 in 1929. This is an increase of over $304,000,000, or of 308 per cent. In the same 18 years the average revenue received by the railroads for a ton of freight carried one mile increased only 45 per cent, and the average revenue received for a passenger carried one mile increased only 43 per cent.

Railway taxes amounted to over $270,000 a day in 1911, while in 1929 they were over $1,103,000 daily, an increase of approximately $833,000 a day. It required the revenues of 13 days in 1911 for Class I railways to earn their taxes. In 1916 it required the revenues of 16 days. In 1926 it required 22 days, and last year these roads were compelled to work 23 days in order to earn taxes imposed upon them.

Unlike the tax payments, the cash dividends of the Class I railways have been lower than they were 18 years ago, until the last four years. In 1916, the amount the railways paid in taxes was about half what they paid in dividends. In the years immediately following the taxes increased markedly and the amount in dividends decreased, with the result that in 1920 the taxes exceeded the dividends. The dividends were ahead in 1921, but in all of the four years 1921 to 1925, the taxes were greater than the dividends. The relationship was at its most disadvantageous position in 1923, when taxes exceeded dividends by 12 per cent. In 1924 and 1925 increased dividend disbursements tended to restore a parity between the two, but even in 1925 the taxes were 5 per cent in excess of dividends.

While it is true that during 1928, the latest year for which information is available for dividend payments, railroad dividends exceeded taxes by about 10 per cent, the amount of taxes paid to federal, state and local governments exceeds by a margin no means slight the amount of dividends actually paid to that part of the public which includes the stockholders. In other words, large dividend disbursements were made last year by subsidary companies exercising control by stock ownership.

When considering the seven years, 1922 to 1928 as a whole, the Class I railways have paid approximately $14,000,000 more to the tax collector than they have paid in cash dividends to their owners, the stockholders.

It is these dividends or profits which provide the stockholders reasonable returns on their investments and maintain the credit of the railroads. Without profit and credit, railroads cannot maintain new structures and carry on dependable service. Profit, therefore is the goal of the railway executive. Heavy taxes hinder his reaching this goal and at the same time choke the breath of commerce.

Empties Coming Back

Have you ever sat by the railroad track
And watched the empties coming back,
Lumbering along with a groan and a whine,
Smoke streaming out in a long gray line
Belched from the engine's panting stack,
Just empties coming back?

I have, and to me those empties seem
Like dreams I used to dream
Of a girl, or money, or maybe fame.
My dreams have all returned the same,
Swinging along the home-bound track,
Just empties coming back.

—*Chicago Tribune.*

On the Cover

The picture on the cover this month is reproduced from a photograph of three of a new fleet of Lima locomotives now in service in the Boston & Maine Railroad. The picture is a snap shot taken while the engines were moving at from 30 to 35 miles an hour. They had started abreast to be photographed by sound-movie men and had run half a mile when the "still" photographer got in his work, and a rather remarkable picture he turned out; although it may be criticised by the fuel conservation gentlemen who seem never to appreciate art.

The locomotives are known as 4000 class. They are 100 feet long, and costing $100,000 apiece and are able to haul the heaviest freight trains on the 200-mile run from the Hudson River gateway to Boston with only one stop enroute.

The new plus-locomotives with their great tenders carrying 18,000 gallons of water and 23 tons of coal, are the biggest in New England. They dwarf in comparison the huge engines that amazed New Englanders with their size only a few years ago. Boston & Maine enginemen have dubbed them "Camels," because of their tremendous water capacity. With the pulling power of 3400 horses, they can haul the heaviest freight loads from Boston to Portland, or from East Deerfield to Boston and similar runs, without stopping for water.

The new engines make the run from Mechanicville, N. Y., to Boston with only one stop, a run that formerly necessitated stopping trains three times enroute for coal and water. Each of the new locomotives weighs 337 tons, and has a tractive power with booster of 81,400 pounds. Their purchase is a part of the $75,000,000 improvement program of the new Boston & Maine System.

Aid for Inventors

A clearinghouse for inventive genius of this country and of Europe to provide the best markets for the thousands of new devices developed yearly, serving both the inventor and the manufacturer, has been organized by Campbell, Peterson & Co., investment brokers of New York, it is announced by R. Potter Campbell, chairman of the board.

Associated with this company the financial backing of the plan are some well-known Wall street financiers who will be represented on the board of directors of the organizing concern.

The aim is to organize an industrial intelligence service consisting of six special departments. The first of these is to be an industrial service bureau, which will seek out, through advertising and contact, new devices, processes and machines, canvassing inventors, research laboratories, technical societies and engineering sources. A similar service will be established in all strategic industrial centers of Europe to keep in constant touch with inventions abroad.

More Than 900 Million in Dividends

The annual compilation of cash dividends paid by the Pennsylvania Railroad shows that, including the dividend paid Feb. 28 last, stockholders have received since 1856 a total of $943,053,446.11 in such payments.

Last year $46,835,965 was disbursed in dividends, representing an 8 per cent return on the par value of the outstanding stock. This was the largest annual dividend payment in Pennsylvania Railroad history.

The Load the Steam and the Schedule

Standardizing the Human Factor

By Charles Dillon

The Loco Valve Pilot.

OF ALL THE things about which railroad men, executives and supervisory officials, have talked, pleaded, ordered and cursed, up hill and down dale, for twenty years or more, the wasting of fuel has led the list. In the same category, on the same sheet, are two other prime requisites: the load and the schedule. There is no ignoring the fact that if an engineer hauls a proper tonnage over the division and makes time only by using more fuel than another man doing precisely the same thing, he has fallen far short of his job, and the finest of power given him has been used inefficiently. These are facts which every operating man and every mechanical officer knows have been proved.

The January issue of *Transportation,* containing 20 or 25 articles written especially for that number by railroad presidents, was noteworthy for the emphasis which every contributor placed upon increased power and its efficient use. Now, efficiency, a much-employed word, means doing the utmost with proper tools or machinery. An efficient person, the dictionaries say, is habitually energetic, sagacious and alert. If an engineer measures up to these qualifications the railroad company has a right to expect results indicating the highest degree of efficiency, the use of brains. If he fails in such measurements he is a loss in any cab.

Say whatever you please, there is no denying that the average engineman is concerned, first, with making his schedule and, secondly, if he has been trained to it, to make his run economically. All experienced railroad men know this. It has been the unwritten rule from the days of Stephenson's Rocket to the time of going to press with this issue. This fact is so thoroughly grounded in mechanical circles that on most roads the man saving the largest amount of fuel is rewarded. He gets a trip to the yearly convention, a star on his cap or, eventually, if he lives long enough, a diamond-studded badge, all for doing what, in the first instance, he is supposed to do as a duty.

Obviously, these engineers are not rewarded primarily for the specific amount of coal or fuel oil they have saved, but because they have set an example which the company's officials hope will be followed by others. This is, and long has been so firmly established as an important feature of railroading that special articles with facts and figures and portraits of the heroes are published; and one forward-looking management actually printed a handsome book about it. Conventions have talked for years about such laudable performances.

Why all this very commendable noise and agitation about a few men saving tons of coal or other fuel? Because managements hope that some day, it may not be for years, but *some* glad day, all the engineers and firemen will, by their works, be entitled to trips and stars and diamond badges, world without end, until further orders.

The problem, then, as affecting railroad operation, and particularly with respect to that most vital con-

sideration, the performance of the locomotive, resolves itself largely into a question of ways and means to standardize the human factor. It is not practicable or even desirable, to jeopardize individual initiative by any attempt to convert the man into a machine, but rather the reverse. We must make the machine, in this case the locomotive, as independent of human limitation as possible. Fortunately, recent developments in locomotive operation have brought relief from exclusive dependence on the judgment of the individual. His effort to obtain maximum efficiency can now be assisted by mechanical means of indicating accurately and recording the phases of locomotive operation, and the goal of uniform performance comes closer to realization.

Officials of the mechanical department and engineers know, of course, that the operation of a locomotive is complicated by the fact that the engineer has at his disposal two methods of controlling speed and work: the reverse lever regulating the point of cut-off, and the throttle valve regulating the pressure through the valve chamber to the cylinders. Unfortunately, the throttle operation, most costly in fuel, is too frequently used. And right there we have a demonstration showing the difference in men: One getting his load over the division economically, which is efficiently, and the other taking the easier but more costly method; one getting the desired result by the use of keen intelligence; the other unable to get his engine over the road on time if he had it on a flat car.

It would take the whole magazine to describe the technical discussions of learned men who have worked over this troublesome and costly subject. The real problem, which up to the present has been overlooked or, at least, has not been solved, is to provide the engineer a simple and trustworthy guide enabling him to make the best performance. The pioneers in this field have done much toward solving the problem but, as happens so often in really scientific matters, their achievements have not been described in a way easily understood by men for whom the work has been done.

Passing over the obvious fact that the excessive use of steam means fuel waste, hence the value of the cut-off, a fact which is acknowledged, it is fair to say that the proper use of steam and the achieving of proper economical results depend upon the engineman's training and adaptability, both of which are subject to infinite variation due to environment and other causes. It is apparent then that coordinating and making immediately available the best that is in the locomotive and the man running it, will bring about increased earnings and higher operating efficiency.

Realizing that men and methods vary greatly, it seems reasonable to expect that executive and supervising authorities, so deeply concerned with uniformity in locomotive performance, will turn with relief to a mechanical device known as the Loco Valve Pilot. This device takes little space in an engine cab. It indicates the speed of the locomotive and the cut-off actually being used, and by these indications enables the engineman to equalize the varying elements of operation, to follow the correct method of operation, and to get the best performance possible within the locomotive's capacity. It does this by eliminating guess-work about speed and cut-off, without affecting the engineman's duties and responsibilities, leaving the locomotive entirely within his control at all times.

To describe the apparatus clearly, and leaving out all the extremely technical elements, the valve pilot utilizes the definite relationship between piston speed in feet per minute and locomotive speed in miles per hour, and combines the functions of a speed indicator and recorder with those of a cut-off indicator and recorder. It consists, essentially, of a dial having two hands, one showing the locomotive speed, and indirectly the corresponding piston speed in feet per minute, the other hand showing the position of the cut-off at the locomotive cylinder valves expressed in the miles per hour for which that cut-off will produce maximum drawbar pull. The speed hand is operated by a direct hook-up with the driver on the wheel in contact with the rail. The cut-off hand is connected mechanically to the tumbling shaft by means of a cam movement which corrects the angular displacement so that the hand-travel reflects correctly the changes in cut-off. The device provides a graphic record which shows how the locomotive actually was operated, from which the operating department can determine for every point of the run whether the locomotive was operated efficiently. This is done by comparing the tape record with a profile of the road drawn to the same scale as the tape record and showing grades, curves, and other physical characteristics.

When the engineman moves the tumbling shaft with the reverse lever mechanism, it changes the cut-off and moves the hand on the dial to the speed at which the new cut-off will produce maximum power. Conversely, if the engineman desires to apply the cut-off for a particular speed, he needs only to move the reverse lever until the cut-off hand on the dial registers the desired speed; the cut-off will then be at the point to produce maximum drawbar pull at that speed. Cut-off and speed are no longer unknown quantities, and the engineman may proceed confidently to apply them with accuracy. Or, to state it more clearly, the engineman, to produce maximum power, has only to move the reverse lever so as to make the cut-off hand coincide with the speed hand, and if the speed hand moves, to follow it with the cut-off hand.

If at any time the train makes more speed than is required with the two hands together, it indicates the development of too much power, and the cut-off hand, by use of the reverse lever, should be moved ahead of the speed hand, shortening the cut-off until a point is reached where the desired speed is maintained. The engine will then be hauling the load with the shortest possible cut-off and with the least possible consumption of steam and fuel.

Following the indication of the Loco Valve Pilot results in duplication, within a very narrow range in current operation, of test plant or dynamometer car determinations. These have shown, in past experience, that a locomotive will deliver maximum drawbar pull at one definite point of cut-off for each speed, and that any variation in cut-off, longer or shorter, will result in a decrease in drawbar pull. As long as that speed is maintained, any shortening of cut-off results in increased economy and savings, and any lengthening of cut-off results in waste and loss. The exact point of cut-off for maximum drawbar pull having been determined from such data, it is converted by a cam in the Loco Valve Pilot into terms of miles per hour, so that when the speed hand and the cut-off hand are together the cut-off is then at the point for maximum output. Should occasion arise to disregard the speed or cut-off position, independently or in relation to each other, the Loco Valve Pilot in no way prevents such a method of operation.

A more elaborate description in technical language, with result tests, is contained in an address before the New York Railroad Club by John L. Bacon, of the Valve Pilot Corporation. A copy in booklet form may be obtained from the company at 230 Park Avenue, New York.

From the Valleys to the Mountains By Motor Bus

By Clyde Cook

By Motor Bus Through Waterman Canyon.

CARRIERS of United States mail, passengers and freight, the Motor Transit Co. with offices in Los Angeles, is one of the few mountain transportation lines to survive and develop steadily despite stiff competition in these merging times. Much of this company's success is due, of course, to the work of executives well schooled in the rigid curriculum of actual experience in transportation problems.

Max Green, traffic manager for the company, says that when the project was started in 1912, Kirke Phillips, who called it the Mountain Auto Line, had an old T-model Ford touring car and 1½-ton truck. These he merged, coming out one day with a combination freight and passenger car. With such equipment he started service between San Bernardino and Pinecrest, handling perishable freight and passengers.

People liked it and did what they could to encourage its continuance. Dr. J. N. Baylis, of Pinecrest Resort, and George M. Cooley, pioneer hardware merchant of San Bernardino, helped Phillips with business and equipment, and others contributed labor.

As the business grew, the little company used larger equipment. Passengers and freight were separated. The first real tonnage handled from the valley to the mountains was cement from the Colton Cement plant to Lake Arrowhead, taking the place of six and twelve-horse mule teams. A two-ton truck would make three loads to Lake Arrowhead in one day as against one round trip by team every two days.

The Greens, Max and Perry, went into the venture in 1913. Phillips died shortly afterward, and then the new owners began to discover problems of competition and the need for more efficient organization. The biggest problem, perhaps, was that of interesting San Bernardino county in mountain road building. In 1915 there were no houses on the Pinecrest-Lake Arrowhead road with the exception of the toll house in the mouth of Waterman Canyon, Dorman's Ranch House, Skylands Inn, Pinecrest, Squirrel Inn, Billy Steven's Cabin at Strawberry Flats and the construction camps at Lake Arrowhead and Knight's camp in Big Bear Valley. But the roads were built, and shortly afterward people began to appear interested in building homes, and in traveling back and forth to the mountains in the summer. Since 1915 such places as Strawberry Flats, Alpine Glens, Skylands, etc., have grown to be little cities with several hundred private homes. This same thing happened wherever roads were built, so that it seems fair to say that San Bernardino has made it pay from a tax standpoint.

Obviously, to make a bus line pay a man must think of a number of things just as the passenger agents do for railroads and electric railways—things to attract people. It is very doubtful whether there would be many "state picnics" around Los Angeles were it not for the energetic organizing work of the Pacific Electric Ry. Co. In the same class exactly is the promotion work of the Motor Transit Co., which now is working a venture which it expects to develop in the next few years to create more passenger traffic—winter sports. This new recreation will require equipment to move the snow from the roads, and better roads to carry the traffic after the ground is wet. But since this is a highly de-

veloped resort district, catering to tourists and week-end visitors who indulge in such pastimes, it naturally behooves the company to exert itself along these lines.

The Motor Transit Co. purchased the Mountain Auto Line in 1920, and since that time has been developing new type cars to use in the service. "We believe we have just found the proper unit for this service," says Max Green, traffic manager. "It is a piece of equipment that can be used in the valley and continue through to the mountains, handling its load with little or no effort. At present the Motor Transit Co. serves 1400 miles of highway in Southern California, handling one-half million people monthly, and last year transported 35 million.

"We build our equipment in Los Angeles for this particular service, 40-passenger cars equipped with 140 h.p. motors. We employ 463 men in our system and cars are operated 18 hours daily. We have schedules leaving Fifth and Los Angeles streets Union Stage Depots from 6:00 a.m. to 12:30 a.m., serving all of California as well as the entire nation.

"Tickets are now sold from all parts of the system to the mountains,

F. D. Howell
Vice President and General Manager, Motor Transit Co.

and service maintained from San Bernardino to Lake Arrowhead and Big Bear Lake via Pinecrest, from San Bernardino via City Creek to Big Bear Valley, from San Bernardino and Redlands to Forest Home, Seven Oaks and Big Bear Lake. We also operate, for the benefit of those people who wish to make all resorts, a trip we call the 'Rim of the World,' going in one way to the resorts and out the other, using Mill Creek and the Crest Route. Mountain service is just as safe for the passenger as using the buses on valley boulevards. Anyone trying the bus once in the mountains, usually leaves his car at home thereafter."

The present officers of the Motor Transit Co. consist of T. B. Wilson, president; Franklin D. Howell, vice president and general manager; Max H. Green, traffic manager, and Claude M. Allen, superintendent of the mountain division. While it is Mr. Green's official duty to maintain a smooth-functioning organization throughout the entire system, it is Mr. Allen's work to keep friction from hindering the operation of that most difficult of all divisions, the mountain division.

The man who sells an article has, first of all, absolutely to believe in what he sells, otherwise he cannot do his best. If you have not sold Missouri Pacific transportation to yourself, you are not in a position to sell it to others.—*L. W. Baldwin.*

Los Angeles Terminal of the Motor Transit Co., on South Hill Street.

Boeings Have Flown 9,000,000 Miles

Radiophones to Overcome Dangers of Fog or Storm for Airships; Low Rates

By A. K. Humphries

Asst. to President, Boeing System

AT MIDNIGHT of June 30, 1927, a company whose planes had never flown a mile of air mail transport took over the operation of the world's longest regularly operated air line with daily service, the Chicago-San Francisco route of 2,000 miles.

One day last month this operating organization, the Boeing System, recorded the flying of its nine millionth mile, and out of that nine million miles there have been evolved some very definite observations as to operating practices and the future of air transport.

The experience of the Boeing Company in operations is important because it is not only the largest operator in point of mileage flown but its route presents a combination of operating conditions representative of any and all which will be found in the United States.

Our planes fly from sea level to 12,000 feet, over five mountain ranges. Temperatures range from 30 below zero to 120° F., over snow-capped mountains and sun-parched deserts. Also, the San Francisco-Chicago route carries the heaviest mail loads of any line in the country. Boeing System at present moves about 28 per cent of the nation's air mail, and planes built by the Boeing Company are in use on six air mail lines and carry 50 per cent of the nation's air mail.

At present the majority of airplane companies are concentrating on the business man, both as a purchaser of airplanes and the potential patron of the established air lines.

The airplane is no longer an experimental, once-in-a-while, spectacular vehicle. Its future is ahead of it, while other forms of transportation have approached their maximum speed and lowest operating costs. Experiences of our own company in selling planes to corporations and individuals for business use, and of our transportation system in interesting business men to travel on and use the regularly scheduled ships, is typical of the story of factories and air transport companies over the country.

Airport at Indianapolis, Ind.

Some specific cases should prove interesting, and at the same time indicate a definite trend. From such cases other businesses and other business men may get an idea as to how this new tool can be adapted to their needs, and as to how it may influence their regular, everyday operations.

An interesting side of air transport as it relates to business is the part it is playing in stimulating business, creating new trade zones, abolishing long established transportation limits, changing financing methods, and its general effect on business due to its being normally three or four times as fast as train shipments. Here again instances illustrate the point.

A candy company has a fleet of planes for transporting salesmen, and incidentally to entertain customers. A Cleveland bank has provided an airplane for one of its flying executives, who looks up aviation business for the company and is sent on important missions to distant points. Newspapers have purchased planes to obtain wider distribution of their papers and to cover more important news events.

One large manufacturing company operates a multi-motored plane in the East on a schedule as regularly as a train, and it has found that it has saved the cost of operation by rushing replenishments of parts, the lack of which would tie up certain production entailing large loss of payroll and interfering with production schedules.

Recently we sold a flying boat to a concern that will use it for distributing supplies to Alaskan mines, inaccessible except by pack train or dog team. Undeveloped countries like Alaska offer many opportunities to aviation.

Another seaplane of the same model is used in British Columbia waters to spot schools of fish and to apprehend fish pirates whose speed boats cannot outrun this 115-mile-an-hour craft. Planes of a Canadian exploration company flew 100,000 miles last year and brought dividends to its

EDISON and his STORAGE BATTERY

Ninth of a Series of Historical Sketches Presenting the More Significant of Mr. Edison's Series of Experiments from 1898 to 1908 in His Search for a Dependable, Economical Storage Battery

(Reprints of previous issues will be mailed on request)

Edison Orders the Cell Containers Welded Shut

ONE of the oft-repeated stories about Mr. Edison, illustrating his habit of taking the shortest route to the solution of a problem, dates back to the days when he was at work on the incandescent lamp.

Mr. Edison asked Mr. Upton, one of his laboratory assistants, to calculate the cubic contents of the pear-shaped bulb which was to be used in the lamp experiments. Mr. Upton, a skilled mathematician, drew the shape of the bulb exactly on paper intending to compute its contents by mathematically solving the equations of its curves.

He had been thus engaged for what Mr. Edison evidently thought was ample time, when Mr. Edison appeared and asked what he was doing. When Mr. Upton explained, and told how soon he expected to finish, Mr. Edison said he could get the answer within five minutes merely by filling the bulb with mercury and measuring its bulk.

A somewhat similar incident occurred many years later when the commercial design of the battery was being worked out, and the question arose as to how to seal the cells. Numerous methods were suggested, some of them involving complicated and bulky construction. Mr. Edison considered them all and then amazed everyone by announcing tha the thing to do was to weld the covers on.

From the time Edison Batteries were first put on the market twenty-tw years ago repairs have proved necessary so infrequently that cell cove have been welded on ever since.

When it was pointed out that this would make difficult to repair the cells when necessary M Edison merely asked "Why will repairs be nece sary?"

So the cell covers were welded on; and repai have proved necessary so infrequently that the ce covers of Edison Batteries have been welded o ever since.

Thomas A Edison

Edison *Steel Alkaline* Batteries give Economy a Control, Gas-Electric Rail Car, Signali

EDISON STORAGE BATTERY COMPANY, ORAN

How much car lighting storage battery expense lies concealed . . .

—in account 402, *train supplies and expenses?*
—in account 317, *passenger car repairs?*
—in other accounts?

ry time train speed is below the point at which the axle generator cuts in, l lighting must rely *entirely* upon the dependability of the storage battery in the car.

We urge you to find out.

Should you desire, we will gladly place at your disposal the services of our engineering accounting department to assist you.

We advocate it for two reasons:

First, when you know what your battery costs actually amount to per year of service, you will have taken a long step toward controlling them.

Second, the more acurately costs are known, *the more extensively are Edison Batteries used.*

The reasons are as simple as A.B.C. . . . They are of all steel construction.

They are just as rugged in electrochemical action as in mechanical construction.

They give more years of *full capacity* service per dollar of initial cost.

They require fewer repairs and less maintenance per year.

And, best of all, *they can always be depended upon to light the car.*

pendability in Car Lighting, Multiple Unit
tive Power and Other Railway Services.

TRADE MARK
Thomas A Edison

BRANCHES IN PRINCIPAL CITIES

Port Columbus, Ohio. Here Passengers From New York, Arriving on Pennsylvania Trains in the Early Morning, Board Planes for the West.

prospectors who discovered a high grade copper property from the air.

In the Middle West large wholesale houses have bought planes to transport salesmen, to fly executives to regional trade conferences, to rush emergency shipments, and grocery companies, specialty manufacturers, advertising salesmen are a few of those who are flying for business. The air transport companies are assisting the airplane manufacturers in creating a market as business men, when they ride on the transport lines, quickly sense the possibilities of the airplane.

The Boeing System, which has just completed flying 9,000,000 miles on the Chicago-San Francisco and Seattle-Los Angeles routes, during which period it has carried several thousand passengers, has determined that its patrons are not adventure seekers but almost exclusively are business men and women, particularly executives who fly to save time. Also they like to fly, and believe that the added cost is offset by the advantages of defeating the time element.

One problem of the transport lines in substantially increasing the patronage is to get the traveler up in the air the first time. A recent survey completed in Detroit showed that out of 1500 business men questioned only 40 per cent had ever been in an airplane, but practically all expressed the opinion that the airplane was a safe, rapid form of transport which eventually they would use.

It will appear from the response to the questions regarding the use of air service for emergency and business trips, that the field of air passenger traffic is large and practically untouched. It should not take a great deal of additional education to bring the individual who would use a plane for an emergency trip to the point of seeing the advantage in the use of air travel on routine business trips. To develop this business unquestionably will require some carefully planned and intelligently conducted advertising and educational work on the part of air service operators.

The public is wrong when it thinks air transportation is too expensive for what one receives in speedy, comfortable, interesting travel. Figures prove it. If one bought a ticket for a one-way ride in planes flown over every air transport line in operation today, on regular schedules over established routes, in the United States, this aerial tour would total 18,914 miles and the fare would be nine cents a mile, but the difference between the 3.6 cents a mile charged for rail transport and the nine cents required by airplane is more imaginary than real. Air mileage between cities generally is less than rail mileage. There is no chair car or Pullman fare on the plane, nor taxi fares to and from terminals, for nearly all air lines include that charge in their tickets. And to save time is to save money.

This country is making rapid progress aeronautically. The public has never rejected any faster form of transportation once it has become accustomed to it. Twenty years ago the automobile was regarded as an experimental vehicle and its efficiency was questioned. A man can still be conservative and predict that many of the problems confronting the airplane manufacturer will be solved in the next decade, and that airplanes, while not commonplace, as are automobiles, will be in general use in a diversity of activities in which they are not now employed.

The public must differentiate between stunt flying and operations of reliable transport companies. The

Municipal Airport, Kansas City, Mo.

Boeing System, for instance, in flying 9,000,000 miles has had only four fatalities, and these would have been avoided if the radiophone had been perfected, as most of the accidents and delays to air transport are attributable directly to fog and bad weather. Only four per cent of Boeing System's delays to air mail are due to mechanical difficulties.

By the time this article appears in *Transportation* the Boeing System will have in operation the most comprehensive network of radiophone stations in the world. Our pilots, all the way from San Francisco to Chicago, and later from Seattle to Los Angeles, will be able to talk to ground stations 200 miles away, and from an altitude as great as 14,000 feet.

Radiophone seems not only to add much to the safety of flying but to increase efficiency and reduce delays, thus reducing operating costs. Boeing pilots agree that an analysis of uncertainties confronting the pilot in the early stage of air passenger transport revealed four principal needs:

A means for keeping on the course when flying above or in fog.

A means for effecting a safe landing after having found the terminal in bad weather.

A means for communicating weather information and orders to the pilots.

A means for receiving and checking information from the pilot in flight.

The Boeing organization, after 18 months of experimentation, has demonstrated that many of the accidents which have occurred would have been prevented had the radiophone been perfected to the point at which it is now used by Boeing System on its western divisions, where pilots are talking over a telephone with ground stations 200 miles away, and with pilots on other planes in flight.

Colonel Lindbergh would never have joined the caterpillar club by jumping out of his mail plane near Chicago if he had had the radiophone. The field crew at Chicago heard him over the airport, and if they could have communicated with him (as is now possible under the Boeing System set-up) he could have been brought into the Chicago airport just as a train is threaded through a maze of tracks to a terminal.

Largest Plane Flight This Summer

The world's biggest bird—the giant seaplane DO-X—will fly the ocean and tour North America this summer if plans announced March 26 are carried through.

Taking off from Lake Constance on the German-Swiss border early in July, the big seaplane, which has a capacity for 150 passengers and baggage, would be flown over a 4775-mile course to New York City. Stops for fuel would be made at Barcelona, Spain, the Azores Islands and Bermuda.

She would be operated by a crew of six and carry 50 passengers, the small passenger list allowing an increased fuel load for the long hops from Barcelona to the Azores and from the Azores to Bermuda, 1655 miles and 1821 miles, respectively. Allowing for an average 25-mile-an-hour head wind the elapsed time of the flight would be approximately fifty hours.

After arriving at New York the DO-X would make one trip to the Great Lakes, stopping probably at Buffalo, Cleveland, Detroit and Chicago, then return to New York City and skirt the North and Central American coast via the Panama Canal to Pacific Coast cities.

In discussing the flight with associates, Dr. Dornier has insisted that he was not interested in the spectacular aspects of the flight, that it was being made to demonstrate the feasibility of trans-Atlantic airplane service.

The big seaplane, in reality a flying boat, is of monoplane construction, 162 feet from wing tip to wing tip, and with a 152-foot hull. On its trans-Atlantic flight it will be powered by twelve 600-horsepower Curtiss-Conqueror motors, manufactured at the Buffalo (N. Y.) plant of the Curtiss-Wright Corporation. Two of these motors already have been shipped to Friedrichshafen for installation. They will develop 1200 more horsepower than the motors with which she made her test flight last October, carrying 169 passengers.

With the 50 passengers and fuel for the Azores-Bermuda hop she will be carrying a useful load of 40,800 pounds. The fuel alone for one hour of flight weighs 1800 pounds.

The twelve motors are mounted in tandem formation on an auxiliary wing above the main wing, six of the engines pushing and six pulling. The captain and navigator occupy a small compartment in the hull, independent of the pilots, who receive signals for the maneuvers and send signals to the engine room where an engineer controls the throttle.

The DO-X was launched on Lake Constance July 14, 1929. She was built at Alienrhein, Switzerland, just across Lake Constance from Friedrichshafen, home of the Graf Zeppelin.

There have been rumors that Dr. Dornier was connected with the Zeppelin Company, but so far as information in this country goes that is incorrect, and this summer's flight will not be in line with the proposed trans-Atlantic Zeppelin service, which is being financed jointly by German and American bankers.

Lambert Field, St. Louis.

And Here Are the Gentlemen Who Dedicated the New Car Shops. They Are, in the Usual Right to Left, K. F. Nystrom, Supt. Car Dept.; J. J. Hennessey, Formerly Master Car Builder, 82 Years Old; H. A. Scandrett, President; J. T. Killick, Vice President, Operation, and J. A. Deppe, Asst. Supt. Car Dept.

A Million for Car Shops

By C. E. Richard

A MARKED advance in the methods used in building and repairing railroad cars was celebrated recently when employes of the Milwaukee Road staged a safety first and cooperative rally to mark the formal opening of a new freight car repair shop at Milwaukee. The opening was an epoch-making event in the history of the Milwaukee shops because in place of a number of outdoor operations, this building will enable the railroad to combine under one roof these separate operations under the straight line principle of production. Freight cars entering the north end of the building leave the south end ready for service.

The construction of this building was started on August 1, 1929, and completed on schedule, January 25, 1930. The shop is 1003′ long, consisting of forty 25′ bays, 196′ wide, the east and center bay being 60′ wide and the west bay 72′ wide. One feature of the building is the fact that there are no cross walls in the entire length of the building. There are seven tracks running through it. These tracks branch into ten at the south end of the building to form a storage space in the paint shop section. The center bay is devoted to machinery and the east and west bays devoted to space for working on cars. The south 300′ of the east and west bays is assigned to the paint shop. In conjunction with the shop on the north half of the east side are the lunch and locker rooms designed to accommodate 400 men. This portion is a one-story building 40 feet wide and 225 feet long with a second story in the central portion for superintendent and foremen offices.

Three 15-ton overhead cranes serve the shop. There is one crane in each bay. In addition, a five-ton transfer crane is provided in the north end to transfer material from the unloading track outside the building to the inside of the shop. Two two-ton wall bracket cranes are situated on the east column line of the center bay for handling car frames.

The electric power and lighting of this shop is a special feature. The illumination of this shop at night is very close to daylight effect. Power outlets for rivet heaters and other electric tools are provided on every other column throughout the length of the building. Outlets for compressed air are also situated conveniently on every other column. The shop is heated by 62 unit heaters. There are three unit heaters in the lunch and locker room, first floor and radiators for the office section on the second floor. Five De Vilbiss Spray Hoods are provided for the spray painting in the paint shop.

The building consists of a structural steel frame founded on concrete spread footings. The roof is of the Federal Cement Tile Company's light section haydite roof tile covered with a tar and gravel 20-year guarantee roofing. The end walls are brick to a height of 5′-6″ above the floor and above this are glazed tile. The openings in these walls for admitting cars are equipped with rolling shutter doors. The side walls are practically all glass above a 5′-6″ base of brick. This feature, with a monitor in every other bay in the length of the building, makes this shop the very latest design in daylight construction.

This shop will be under the supervision of K. F. Nystrom, system superintendent car dept., and G. Reichart, shop supt. freight car repair department, Milwaukee Shops. The shop was designed by the Foundation Company and constructed almost entirely by Milwaukee contractors. W. J. Miller was superintendent of construction for the Chicago, Milwaukee, St. Paul & Pacific.

"I am less interested in the facts that you put into young folks' heads than in what you put into their spirits."—*Herbert Hoover.*

The Milwaukee's New Car Shops at Milwaukee. This Structure is 1003 By 196 Feet.

—Aero Lloyd Photo; International.

The Yardmen Have a Fine Time of It in This Busy Distributing Point, the Berlin Yard, the Potsdam Station at the Right.

How Long Has This Been Going On?

An Old Yardmaster Talks Sense

By C. C. Cornell

Loss and damage represent the expenditure of large sums of money by the railroads from which there are no returns. In fact, additional expense is incurred by a staff of employes who devote their whole time to the reduction of this leakage in earnings. Meetings are held with representatives from all divisions to discuss this problem and offer suggestions for improvement, and these meetings are considered of sufficient importance to require the attendance of some of the general officers.

Damage to contents in transit is the major item and while the study of this subject has developed that a portion is attributive to road handling such as emergency stops, break-in-twos and defective air brakes, switching at terminals carries the larger end of the blame.

The terminal man usually is a man of action rather than of eloquence even in self defense, which in a measure accounts for some of these conferences placing 90 per cent of this damage on switching and getting away with it.

Having spent about 32 years in this game I will admit that the average switchman uses but two signals, a "Highball" and a "Washout," and in addition can ruffle the engineer's feelings with signals, although he is many car lengths distant, just as effectively as if he had said it in his presence, and this does not tend to gentle handling. However, it has been said, "Criticism is of little value unless a remedy accompanies it."

Since the handling of equipment in terminals is credited with being the principal cause of damage, it is of interest to know that this equipment is handled and rehandled unnecessarily. Therefore every movement that proper method would avoid is an additional hazard to the lading.

Speaking from the coast end of this subject I would call attention first to the geographical features of the transcontinental carriers. One line is representative of all. The Santa Fe from Barstow west must distribute freight that has come for a long haul in undisturbed units, and

Mr. Cornell is chief clerk to the vice president of operation, Key System Transit Co., Oakland.

—International Newsreel

Here's a Freight Train Plugging Along in India, Over a Two-Foot Gauge With a Rise of 6,000 Feet in 45 Miles.

the reverse, in assembling the cars for movement east, is a still greater problem. Los Angeles puts a caboose on 48 cars, and there probably are that many switches to be made in that train on its arrival at San Bernardino, 60 miles away. Leaving there with 72 cars in supposedly station order it arrives at Barstow to lose its northern freight and pick up what came from the north, going to about the same variety of destinations as it had for the East in leaving San Bernardino. Then, further to complicate matters, is the segregation of cars under ice. Another joker in the attempt to keep things straight is the diversion order of which most of the terminals have a liberal supply.

I have no data to show who originated the mass production idea. My attention was called to it when I saw a pig start through a big packing house and arrive in the refrigerator with the same chain on the leg that started him on his journey. Perhaps the automobile factories and fruit packing houses obtained their idea from the pig. At any rate, something similar in nature can be applied to terminal operation with the main objective, to get the car to its destination with the minimum of switching.

To get this clearly before you, we should first consider railroad development during the past 40 years. Rolling stock, motive power, roadway and bridges and buildings, block signals and interlockers, truly wonderful. But how grudgingly has the terminal been expanded to meet the ever-increasing volume of traffic. Where do the delays occur? In the terminal principally.

The question of terminal facilities is more easily disposed of than that of terminal supervision, particularly along the lines I have in mind. Operating officials, from the trainmasters up, seldom are experienced terminal men, and there is one good reason why he is not. Real yardmasters are scarce. Did you ever consider that there are about three men on the job who work in the present tense? The trick dispatcher, the yardmaster and the callboy; most of the others are holding a postmortem on what has happened in the more or less recent past. Even the officer's business car has the observation on the rear, and he sees a thing after it has passed, and perhaps sends a wire about it. What I mean, is to separate the terminal from the road supervision entirely. As it is, the yardmaster's interest is bounded by his yard limit boards, the trainmaster by his division, and I fear to go higher.

Flagrant crimes in terminal requirements are imposed by gentlemen's agreements between two adjoining trainmasters who would have plenty to look after between terminals. We are looking for a man, wide enough between the eyes to take over every terminal unit in the general manager's territory, and arrange a switching program that has that one objective, to cut out the unnecessary switching. He will put up the trains to suit the operating requirements, both as to time of departure and tonnage, but will have all to say about how they are built up. This also suggests that the time on transcontinental hauls can be cut down without increasing road speeds.

The C. & N. W., at one time ran a train from Wood street freight house, Chicago, to U. P. Transfer, Council Bluffs, without a change in make up. It was switched on the floor of the Wood street freight house by hand trucks; in other words, when the doors were closed and sealed the car was ready for a caboose and engine, and you could set your watch by its departure six evenings a week if you had that kind.

I had the pleasure of an intimate acquaintance with Ollie Rowe, and his obsession was "blocks." By blocks was meant the tonnage over the maximum grade between the Missouri River and the coast for manifest freight. A fill-out of dead freight was added between hills to either end, and it worked out fine except for bad orders and the rather important feature of a lot of switching at Council Bluffs that was all wasted by the time the so-called block reached the Pacific Coast.

Mr. Brisbane has said that one of the most difficult things is to get men to think. Mr. Harriman went a step higher and surrounded himself with men who could be depended upon to do that very thing along the lines for which they were trained. He had practically every department covered, legal, financial, engineering and operation, but some of his subordinates failed in taking cognizance of one important feature, terminal supervision, and this I believe holds true today, in the whole.

The carriers of this country paid $35,000,000 in 1928 in loss and damage claims, and added to that amount the salaries and expenses of a prevention bureau consisting of the best men available. And they are pointing to the terminal as the chief factor in this surprising drain on their net profits, which is a very good abili but does not stop the loss.

The Story the Toll-Gate Tells

By William J. Maddox

Farmers and Others Said Things to the Toll-Keeper When the Roads Couldn't Be Kept in Good Condition. Tolls Began Decreasing.

THE OLD toll-gate may not hang suggestively over the head of the traveler today. But the toll is paid nevertheless, and likely as not to the selfsame old toll-gate keeper, who instead of wielding a boom across the road presides at a gasoline pump and asks, "How many?"

That's the viewpoint of the U. S. bureau of public roads in a motion picture just completed called "Travelers' Toll." The film dramatizes the story of an old toll-gate keeper in Maryland. When he was a young man, say back in 1875, the only good roads were those built by turn-pike companies and supported by tolls. The roads were well kept as long as traffic was sufficient to pay for repairs. They were the "good old days" when public roads were maintained by crews of citizens working two or three days a year, with pick and shovel, in lieu of tax payment.

In the Plug Hat, Quarter-Inch Buggy Days Tolls Produced Enough for Good Roads. Girls Seldom Had to Walk Home.

Then came the railroad branch line, about 1890. Everybody who can do it, and that's almost everyone, takes to the new means of transportation. Traffic on the pike falls off. Tolls become fewer, and every time the keeper collects he gets a "cussin' " from the traveler about the bad condition of the road. The pike goes from bad to worse until finally it is taken over into the state highway system.

Those were rough years for the toll-gate keeper. But just as he was ready to quit, out of the cities came chugging the primitive horseless carriages. The drivers, when they began to feel a little more at home on the road, paid their compliments to gate-keepers for having to stop so often and bother with paying tolls. But business was reviving, and things looked up for the toll-gates.

Then the state stepped in. Down came the toll-rate board and up went the notice that the roads were under state control; there would be no more tolls. The old gate-keeper is out of a job.

Unwilling to leave the highway, he erects a gasoline filling station on the site of the old toll-gate. Automobile traffic increased so rapidly that the state was compelled to speed up road improvement. And to obtain ready

The Railway Branch in 1890 Put a Crimp In the Turnpike Business.

money issued road bonds and adopted the gasoline tax to pay the interest and principal, a modern toll which nets more money and costs the traveler much less to the mile.

The toll-gate keeper feared the gas tax would put him out of business, until he remembered there was no complaint of tolls in the old days as long as the road was well kept. Then he decided to support the bond issue.

What They Were Cracked Up To Be?

An up-State paper contains the following, which many people will agree is quite as patriotic as the lad who stood on the burning deck:

"Philip Sutkoski, railroad employe, ate 63 raw eggs in 20 minutes when they were found cracked in shipment. He stated that the railroad book of rules directs every employe to protect all shipments and to salvage, as much as possible, anything injured in transportation."

Maybe He Feels Better Now

The conscience fund of the Northern Pacific was increased $1.25 one day last month. A letter and check from a conscience-stricken man said he felt he had caused that amount of damage to the Northern Pacific when a boy. The letter follows: "Inclosed find $1.25. When I was a boy I broke a window in a caboose accidentally, and another time at a wreck I took an oil cup as a souvenir. I think $1.25 will cover, including the Old Testament standard of one-fifth added for damages. 'The Lord has saved me from sin and is helping me make things right.'"

Train Time

If there is an end to the rainbow,
As we read in ancient lore,
To what far land do the trains go,
As they rush on past my door?

At night when all is silent
And voices of day are still,
I lean from my window to listen
For the shriek of the train on the hill.

Those shining steel bands are my rainbow,
And if there's no gold at the end,
It's a heart-hungering quest till I find it
Just always around the bend.

So I lean at my window to listen,
I feel the soft breath of the breeze,
But I think of Japan and of Egypt,
Of the palm and the pomegranate trees.

I know my feet never shall travel,
For they are tied down to my nest,
But my heart rides out at train time
And speeds with the train to the West.

—Elizabeth Harvey, L. A. Times.

Here's a Suggestion

German railroads have issued a calendar in which three pages are devoted to each week, primarily to advertise the service given by the railways. There are one or more illustrations on each page, principally views of picturesque points along the lines, but considerable technical data are also included.

Several pictures are published showing views along electrically-equipped lines. These are supplemented with statistics of the length of lines equipped. Thus, at the end of 1928, of the 5,300 km. of railway lines in Germany, 1,554 km. or 2.92 per cent, had been equipped with electric power. Of this mileage, 1,287 km. were long-distance lines and 267 km. were city and suburban lines. The latter included the suburban system of Berlin. This percentage of electrically-equipped lines compared with 2.06 per cent in England, 2.29 per cent in France, 6.60 per cent in Italy, 8.66 per cent in Austria, 7.52 per cent in Sweden, and 0.71 per cent in the United States. The views also include a series of maps of different portions of the railway system, showing by the width of lines the daily traffic carried over each route.

A view is given of the first train over the Berlin suburban system, which was put in operation on June 9 of last year. The electrical trains on this system are made up of one, two, three or four units, each unit consisting of a motor car with four motors and a trailer. At the end of 1928 the equipment consisted of 345 such units. The material used in car body construction is silicon steel, making the car, it is said, the lightest rapid transit car in the world for its carrying capacity.

Horseless Carriages—Remember These Old High-Behinds?—Produced Much Money for the Turnpikes, Until the Railroads Came.

Editorial Comment

To President Hoover

WITH ALL the directness and keenly intelligent thoroughness to be expected from such an eminent engineer, President Hoover has appointed numerous fact-finding commissions. The President has shown himself so open-minded with respect to suggestions that we take this occasion to draw his attention to one more important matter which, we are certain, might develop facts worth knowing.

We suggest the appointment of a commission of competent attorneys, business men and railroad executives, with one or two members of the Interstate Commerce Commission acting in an advisory capacity, to examine the thousands of laws now on the statutes for the regulation of railroads.

As in the case of the rate structure, we have in these laws a conglomerate mass of restrictive legislation, much of it extremely costly and always irritating, amounting in fact to governmental control of steam transportation. In the federal laws and those enacted by the states the railroad managers confront a situation deadly to initiative, and discouraging in the highest degree. A very large part of all these laws should be repealed.

It is reasonable to assume that a commission such as we here suggest might have a tremendously important effect upon the welfare of transportation. It might also relieve the Interstate Commerce Commission of burdensome duties imposed upon its constantly growing staff, and at the same time relieve the roads of the wholly unreasonable expenditures for clerical hire. If a few thousand tons of perfectly useless reports on file in Washington were sold as old paper the transaction might make possible a still further reduction in taxes. At least it might add a few dollars to the vanishing net return of the railroads.

What seems to be a praiseworthy effort to overcome at least two objectionable provisions of the Transportation Act is found in the bill introduced by Senator Howell, (Neb.) March 24. This bill, described in a separate statement by Mr. Howell, seeks to re-write the rate-making section 15-a and the much abused Recapture Clause. Senator Howell's statement will be found elsewhere in this issue.

You May Use Your Knife, Too

Shipments of lettuce from the Imperial Valley district in California are moving at the rate of 250 carloads a day. More than 9500 carloads had moved out of the district up to March 1, an increase of 1039 cars over the same period of last season. The peak of the season of 1929-30 was reached February 21 when 293 carloads of lettuce moved out of the district. Evidence of the increasing popularity of lettuce is shown by the fact that 86 per cent of the Imperial crop is shipped to eastern markets. New York, Chicago, Kansas City and Philadelphia lead in the consumption of California lettuce. Indeed this succulent roughage is shipped to approximately 140 cities in the United States and Canada.

W. C. Fitch, manager of perishable freight traffic for the Southern Pacific Co., expects to see the lettuce record broken this year.

Mr. Fitch should have included in his news story the comforting information that the dining cars on his line carry lettuce knives. No opportunity should be missed to assure the public that one need no longer wrestle with one's lettuce as in former times. A few solemn-faced women still strain their wrists and bend the forks trying to cut lettuce in the old barbaric way—women whose highest proof of real culture in eating is to stick the little finger straight out at an angle of 45 degrees. Lettuce is a pleasant thing to eat when a knife is used. In any other way it is a futile struggle. We shall have something to say presently about the proper, human way in which to eat chicken in a diner or at home. Such matters are filled with national importance.

Dumb Drivers

Automobile drivers seem to be losing their old-time cunning. A careful analysis of the accident reports, some of which were commented upon in this department in February, with others coming to hand in the last month, shows that fatalities and injuries caused by motorists running their cars into the sides of trains are increasing while the number due to the failure of the drivers to beat the train to the crossing is not so large as formerly.

The thing is rather difficult to make out. Motor car speed has increased in recent years. Little excuse can be found for motorists hitting the train instead of the track in time to be ground to pieces in the old way. Hitting the side of a train is much like bumping into a barn or a fence, something that any boob can do. With our improved machinery and higher speed it does seem as if almost anyone ought to step on it in time to get a good wallop from the car catcher. To hit the side of a train is an ignominious act. But to reach the crossing just on the instant and so be assured of being pitched here and there, high, wide and handsome, seems more in keeping with true sportsmanship.

This Sounds Hopeful

President Green of the American Federation of Labor says we may have a revolution in the United States if employment isn't found for the 3,000,000 men he says are idle.

The president of the A.F.L. must indeed be green, especially about world history. Can he point to any revolution that achieved the end at which he seems to be aiming? It is Mr. Green's business to do just what he is doing—throw a scare into congress. Next to Wall Street we know no place so susceptible to the influences of hokum. Mr. Green believes the things he says, doubtless, but he says them as the result of environment, training. He may be trying to emulate the departed Gompers whose meticulosity of speech upon occasion was a real phenomenon.

Industry, society, may be slow in absorbing the men made idle by modern machinery. Sometimes the outlook is a bit dreary. "But," said Dr. Julius Klein, assistant secretary of commerce, in a radio talk a few days ago, "new needs for service spring from new industries of the 'machine age' in American industry, and eventually should take care of practically all the workers displaced by mechanical apparatus."

Dr. Klein said the advance of machinery has never been so swift as here in the United States during the decade of the nineteen-twenties. In a middle western state there is a huge plant which is filled by what is really a single machine. It turns out completed automobile frames almost untouched by human hands. Each frame remains on conveyors nine-tenths of the time. To supervise this vast "automat" about 200 men are employed. The plant turns out between 7,000 and 9,000 automobile frames a day. A rather well-known automobile plant in central Europe also has 200 men in that part of its establishment devoted to this same kind of work. They turn out 35 frames a day. The almost incredible efficiency of our new American machinery could scarcely be illustrated in more striking fashion.

Dr. Klein, like other thinkers, is not discouraged—and remember he is the scientific chap who turned down a very large salary offer not long ago to keep his little "assistant" job where he can do things he likes to do; he is hopeful.

"Viewing the matter broadly," said he, "I think we are justified in believing that the activities which have ramified endlessly from the new machine-driven industries, the new 'service occupations' have been thus created—the new jobs brought into being by our steadily mounting levels of living—should eventually take care of practically all the men and women displaced by the machine. New wants, new needs for service, sprout most luxuriantly from the soil of the machine age. But we must not be remiss in combating the extremely regrettable—even though temporary—human hardships attendant upon the rise of the mechanical 'robot.'

"However, the multiplication of desirable products for the use and enjoyment of us all—the movement that we have witnessed in the nineteen-twenties—can hardly, in its total and ultimate effect, be other than a giant good. It means, inevitably, that we will have more—much more—and will work less to acquire it."

Mr. Green has a right to his opinion about the future. But he is mistaken. The only revolution we shall have here will be among the wheels of industry and commerce. The labor created by the other kind of revolution, the kind Mr. Green fears, apparently, never built cities, happy homes, savings accounts. His kind of revolution delivers death and destruction, not dollars.

Once In a Lifetime

If you find a thrill in statistics you may learn one fact of somewhat minor importance, but still statistical, by watching the coat lapels of men in a crowd. Once upon a time, probably some 20 years ago, an idle reporter, watching the passing throngs in the Union Station at Kansas City, Mo., discovered that eight of every ten men wore some kind of button in their coat lapels, the insignias of various orders or lodges. They are less numerous nowdays but still they are worn by an astonishingly large part of the population.

Most of the buttons worn in coat lapels testify to membership in something or other, proof that the wearer stood the test of investigation. But for all round value, not to be had for money or social standing but only in recognition of a lifetime's labor, the service button of gold leads all other emblems. Fifty years of loyalty to employers, a certificate of close attention to duty, it is today something to prize highly. No man can do better for his boy than to leave for him this proof of steadfast purpose, a fine suggestion in gold to guide him through the years in maintaining a very beautiful tradition in railroading.

The Daily, Hourly Duty

Something was said in these columns in February about The Faithfully Secretary, a woman who had worked for one railroad for 40 years or more. This month a man claims our attention. Richard McHale, after 68 years and eight months faithful service for the Lackawanna Railroad, sits in his easy chair and smokes the hours away, no doubt, in pleasant contemplation of the fine record he has made in a long life given to undistinguished labor. No man's name has been longer on the Lackawanna pay roll than his. Everyone in the region where his life has been spent knows and admires him. No one would think of passing him without a cheerful Good Morning. They are all his friends and well-wishers. They know that in his home there hangs an engraved certificate signed by the chairman of the pension board and the president of the road testifying that for all these 68 years he performed his humble duties faithfully and well.

Richard McHale started his earning career as a breaker boy in the company's coal mines at Scranton, Pa., when he was only ten years old. That was in 1861. When he was retired, February 17, he had been a watchman for many years, his highest post, a post he honored by attending to its duties properly, a job he made important in his own way. Surely this is a consummation all men might seek. In 68 years not one demerit against his record, but many marks to his credit.

McHale never heard of Aughey, the philosopher, but if he had been his student he could not have lived more completely the great thinker's ideal for man. "Do daily and hourly your duty," said Aughey. "Do it patiently and thoroughly. Do it as it presents itself; do it at the moment, and let it be its own reward. Never mind whether it is known and acknowledged or not, but do not fail to do it."

This was McHale's life-program. The president of the Lackawanna can do no better with the same ideal. He and others in like positions of great responsibility can know little more peace of mind when their great day comes than the old watchman knows now that his is here. They merely have been watchmen of another kind. McHale's careful eyes doubtless have saved thousands of lives, millions in property—truly an important job. Great men whose names are known everywhere will sleep no more soundly than he when the summons comes.

Faulty Piloting, the Cause

The importance and necessity for looking after the physical and mental condition of flyers is

stressed by the fact that statistics indicate that 59 per cent of the accidents in commercial flying, 63 per cent for the army and 74 per cent for the navy, are due to the failure of pilots and the human element, the war department announces. It was said that during the past few years there has been a regular decrease in flying casualties in the air corps but there has been no decrease in the causes of casualties on account of failure of pilots.

Behind On Your Reading, Senator

Capper's Magazine for March says:

Railroad taxes for one year come to a total of $295,066,480. This is $1,079,417 a day. They increased 3.5 per cent, or $13,467,890, over those of 1927, while operating revenues were $32,268,750 less than in 1927. Yet the railroads are having the fattest years in their history.

The senator is several years late with his tax figures. In 1916 the roads paid $157,113,000 in taxes. In 1928 this had increased to $389,432,000, and in 1929 it was $402,630,000 in direct taxes, or $3.35 for every man, woman and child in the United States—6.3 per cent of their total receipts.

The tax situation, in railroad matters, is the most alarming thing in present day business. The taxes for 1916 have been mentioned. Look back a little farther. In 1911 the railroads paid $98,626,848 in taxes. Compare that year with 1929 and it will be seen that these taxes have increased $304,000,000, or 308 per cent!

The article on taxes, appearing in this issue of *Transportation,* by Lee G. Lauck, an economist of excellent reputation, is commended to Senator Capper for reading.

An Age of Marvels and Mergers

Air transport companies appear to be following the examples of early day railroads by merging, but they are doing it much sooner in their careers. Aviation gossipers in New York, and especially the New York Times, say big things are about to happen in the business of consolidating, combining, absorbing, merging, or whatever the financiers prefer to call it, and all these things affect the future of the country's transportation; indeed one might say of the whole world. Passenger and mail service across the Atlantic and the Pacific by dirigible, and by boat-planes made to carry 150 passengers—these are promised for this summer; not dreams or stock selling schemes, but air transport equipment built and ready for use.

In this country the merging of many weak air transport lines with larger companies is good sense. What seems to be trustworthy information says the United Aircraft and Transport Corporation is planning to make a definite offer soon for the exchange of National Air Transport, Inc., stock. Meetings of the boards of directors of the two companies will be held at an early date to arrange for a consolidation of the two properties.

Aviation men say the union of the two companies, which would create a complete coast-to-coast airplane line, would bring about an operating time of 30 hours from New York to San Francisco, against the present 50-hour air-rail time on transportation systems operating between the two coasts. At New York the line would tie in with the proposed trans-Atlantic Zeppelin lines and at San Francisco would connect with the proposed Pacific Zeppelin line. United Aircraft and the Zeppelin lines are closely connected with National City Bank interests.

National Air Transport is inaugurating a six-hour plane service between New York and Chicago and United Aircraft, through Boeing Air Transport, a subsidiary, is beginning a 20-hour schedule between Chicago and San Francisco. By means of fast cruising planes now being tested, it was pointed out by aviation men recently, the time between Chicago and New York could be cut down to three hours if expedient, placing the traffic between the two cities practically on a commutation basis.

The merging of United Aircraft and National Air Transport would create the largest air transport company in the United States, with combined assets of about $33,000,000. Furthermore, the combined company would have an interest in Transcontinental Air Transport, now operating an air-rail service to the Pacific with the Pennsylvania Railroad, as National Air Transport owns 50,000 shares of Transcontinental Air Transport.

What a time to live! What a history to read 50 years from now! Television was broadcast successfully a few days ago in England. We now have regular telephone-radio service between North and South America. A man in Hollywood spent nearly $500 one evening last week talking by telephone and radio about a business deal with his agent in Sweden, and didn't even call up the papers and tell about it. He had done it frequently. A pilot in the air can adjust an instrument on his board so that its impulses will turn on a beacon on the earth below! Pilots 20,000 feet in the air talk to persons below them in the hangars!

And still men—some men—go about declaring they can find nothing to do.

What a piker Jules Verne was after all—what limited vision he had.

This Talk of Hard Times

You have only to study the reports from the department of commerce and some of the business agencies to discover the truth of the assertion made here rather frequently, that we are a queer people. Here and there talk is heard about hard times, unemployment, farmers, farm relief and, unpaid mortgages, but strangely enough men who do much of the talking seem to deny themselves nothing. We have never bored ourselves or our readers with heavy statistics, but it is not easy to overlook the fact that this country has nearly 27 million motor vehicles in daily operation. In 1929 the average motorist paid $812 for his car. The more cheap cars sold the more work will there be for men keeping them in order. One manufacturer in Detroit is said to have created work for millions all over the world.

Farmers, we are told, are worse off than ever, but right along with this report comes another showing that motor car and tractor sales to farmers are increasing constantly. Hard times talk is largely hokum.

The Value of Schooling

Figures from the federal department of labor show that an untrained man averages less than $1,200 a year. The boy who stays in school four more years and finishes high school averages $2,200—almost twice as much as the untrained man. In ten years he averages $10,000

more than the boy who never went beyond the grades.

If, instead of continuing his education through the high school period, he succeeded in getting a good job and permanent employment, he might be able to earn $4,000 during those four years. If he put all of this $4,000 in the savings bank and left it there for ten years, he would have, principal and interest, something like $5,375.67. Even if he succeeded in getting eight or ten per cent on his money, it would be much less than the additional $10,000 he probably would earn by having a better education.

If he takes another four years' training and goes through college, or completes a technical or business course, he increases his earning capacity to five or six thousand a year—more than double the income of the high school graduate. He is making four or five thousand a year more than the unschooled man—fifty thousand dollars in ten years. Often his income goes far beyond this.

It does pay to go to school. Someone has said it is worth an average of ten dollars a day. It is interesting, too, to reflect that the figures from the department of labor do not differ materially from those assembled more then ten years ago by the writer of this piece, published in the World's Work. The figures used then proved what they are proving every day, that the boy who "picks up his trade" never gets very far.

States' Interest in Consolidations

The states' interest in the proposed consolidation of railroads, grows out of the fact that all lines exist through state corporation laws, the federal government having no such provision.

Governors, and the business men who seem thoroughly satisfied with railroad service; men who know that consolidations will never result in lower rates, which is their life-ideal, are opposing what they sincerely believe will destroy actual competition. And competition, the business men know, creates and preserves good service which is vastly more important than lower rates. In the Pacific Northwest, it is declared, the Great Northern and the Northern Pacific, although of common ownership, are keen competitors, and business men want them to continue that way.

So far as the aspects of economy are concerned, the abolishing of repair shops, terminal facilities and so forth, and the elimination of staffs here and there, even if they were realized, would mean reduced pay-rolls, and this, certainly every public body will oppose for obvious reasons. Take the shops and the railroad payrolls from a town or small city and you kill it, or at least reduce its prosperity just that much. Putting more money into dividends, if consolidations were to have that effect, would bring no cheers from the public. Railroad payrolls contribute very largely to the welfare of a state. Furthermore, most of the states have contributed largely, at least in the beginning, to the success of railroads, and therefore have a right to express themselves through their officials.

Altogether, it is rather emphatically evident that any attempt of the federal government, through the Interstate Commerce Commission or congress, to invade what are states' rights in the matter of corporations, will be vigorously resented verbally and in the courts. It is being pointed out in pretty strong language, too, that if it was illegal and therefore wrong 26 years ago for railroads to consolidate, it is wrong today, indicating that the old Rooseveltian "trust busting" idea has not died in the public mind. The Northern Securities case is still available for evening reading.

Frank McManamy, chairman of the Interstate Commerce Commission, hits the nail on the head, to borrow an expression from the cannery, when he says, in his dissenting opinion in the Northern Pacific-Great Northern decision, that, in effect, the proposed merger would be unlawful. His chief reason for this energetic term lies in the fact that the Transportation Act clearly requires the commission to hold hearings before approving a merger. Says the chairman:

> Under the procedure here approved by the majority consolidations may be brought about without the required notice to the governor of each state and without an opportunity for the people to show whether or not such proposal is in the public interest. Certainly such procedure is not sanctioned or contemplated by any of the provisions of the act.
>
> The consolidation of these two lines is in complete disregard of the specific mandate of congress that "competition shall be preserved as fully as possible."

Commissioner Eastman, also dissenting, is even more emphatic. Says he:

> Obviously, the attempt to bring this unification under section 5 (2) is subterfuge, such as we ought not to countenance. It trifles with the law. Incidentally, those who devised this subterfuge seem to have been unable to utilize the corporation laws of any state in which the system will actually operate. Instead they had recourse to little Delaware, far removed from the theater of action. In my judgment it is quite arguable that we would be justified on grounds of sound public policy in refusing every application which involves the use of a Delaware charter, except in the rare event that it is to be employed in that state.
>
> So important has the Burlington been to its two proprietors that there is every reason to believe that the present unification project was the outgrowth of a fear, inspired by our tentative consolidation plan, that an effort might be made to divorce the Burlington from one of them. Its importance to both was emphasized by the applicants throughout the present record.

And Better Language Too

Railroad employes, mostly yard forces probably, seem determined to start something or other in Kansas. A delegation headed by one Ed Rafferty, from Kansas City, Kansas, called not long ago at the office of the state labor commissioner at Topeka, and filed a formal blanket complaint against all railroads asking for better switch shanties, and better sanitary facilities in connection therewith.

One of the many mysteries encumbering our life since operator days has been the inadequacies of railroad switch shanties. The men ask for *better* sanitary facilities. We have never seen *any* except those adjacent to but entirely apart from such shanties. These shelters usually are about as comfortable as a telephone booth, and the average yard office is no better. No wonder the men use language that will curl the hair on a buffalo robe. Yardmen do an important work, they perform duties calling them out into all kinds of weather. Their jobs are dangerous, despite all the safe-guards on the equipment they handle. They are entitled to comfortable and sanitary quarters. The state boards of health might wield some influence here.

One of the most interesting things in business and industry is the fact that no ten thousand a year men ever go on strike.

"If a person is really intelligent the first thing he does is to arrange his life so somebody else will do the work for him."—*Clarence Darrow.*

Little Stories About Big Men

Edward Eugene Loomis

A STORY about Edward Eugene Loomis, president of the Lehigh Valley Railroad, just naturally violates all the ethics laid down for the guidance of one upon whom falls the pleasant duty of writing these chronicles of life.

To begin with, Mr. Loomis's father did not die while the boy was still in short pants. He was not forced to get out and earn the living for the family. He went to work because he wanted to do it. He did not begin his career as a water-carrier for a section gang. He was not trained in engineering and, therefore, never was called at midnight to build a bridge before the Fast Express came along in the morning. He never even learned telegraphy. So far as we know he never fired a locomotive, and so missed the chance given all self-respecting heroes, of jumping over to the right side of the cab and taking the Limited in on time when the engineer dropped dead.

Defying all the well-established rules of writing, and practically ruining the story in the beginning, it may as well be set down here, and have it over with, that Mr. Loomis's boyhood and his youth were comfortable times, well-spent, pleasant; he had good clothes, a happy home life, broke no traffic laws—there being no motor cars at that time—and then, to wreck what remains of the original plot, he actually went to college and came out with a degree instead of a flunk. And, if this isn't a pretty dreary outlook for a writing man may we work the rest of our life for waterways.

But this isn't all of it. One more fact, taking away the last hope, is found in the record showing that this peculiar gentleman traveled from his cotillion days to the presidency of a great railroad system over the well-known "white-collar" route—how he must hate those words! Wherefore, as all well-read persons will realize, it is up to us to use an entirely new form for Edward Loomis. It is admitted that he has been a conspicuous success, but what is an old-fashioned writer to do when all his props are knocked from under him in this way?

Much has been said in this department about Luck, spelled with a capital letter. Mr. Loomis doesn't believe in it. He does think there actually is such a thing as Luck influencing one's life, but only to this extent: If a chap happens to meet a certain man, and that man has an understanding heart, one not soured by the crass stupidities of the average applicant for work, *that* is Luck, especially if the man gives the chap a job. After that, in the gospel of Edward Loomis, Luck is out of it; work, intelligence, loyalty and perseverance, these are the qualities to pull a man through.

"Luck," said Mr. Loomis one day to a visitor, "undoubtedly is a factor in every man's life; but the thing that endures and comes through is something else." He illustrates his point in a story.

"Several years ago," he relates, "a young man came to see me about getting a job. I was a division superintendent on the Erie Railroad. He was a stranger to me. He had no introductions of any kind. But I liked him the minute I saw him.

"'I'm a graduate of Penn State College,' he announced, 'and am just out. Here's my diploma. I haven't a cent; in fact, I'm in debt. My mother is partly dependent on me. I want a job.'

"I looked him over. A well-set-up, cheerful young chap.

"'I'm sorry,' I said honestly; 'but I haven't a thing open that would suit you.'

"He shook his head.

"'You don't get me,' he said. 'I want *work;* you must have something.'

"'Will you take a pick and shovel and work on a gang?' I asked.

"'Sure will,' he replied. I gave him a paper to the foreman of the gang. The next morning before seven he passed my house with the pick and shovel on his shoulder. I asked about him after two weeks. He was a fine workman. In a few weeks more he was foreman of a gang. He worked for a year and a half, during which he was promoted several times. Then he came to me again.

"'I'm out of debt and I've saved some,' he said. 'I want to be a surgeon. If I can be assured that if anything happens to me my mother will be safe, I'll quit here and work my way through medical college. I'll be back during vacations.'

"We managed a plan so that he was freed from anxiety as to his mother, and he went to Philadelphia. Every vacation he was back, taking the first job vacant. If he was asked to dig ditches, he dug them. He never welshed. I have no idea where that man is now. But he became a surgeon, and one thing I am certain of, *he's a good surgeon.* Luck? I suppose he was lucky that I gave him that first job. But it wasn't luck that pulled him through."

Writers of experience know that no man ever becomes too big to have fool notions about this or that or the other thing. Some of them take themselves too seriously. Like the ox, many of them dedicate their lives

Control Room of the Electric Ship Virginia. Photo Courtesy of the General Electric Co.

to labor, making of their important positions a hair shirt, metaphorically, to keep them forever on the jump. They shut out the bright things of life, and forget how to laugh except upon some grim victory over a competitor.

You will find none of these faults in Edward Loomis. He may not, perhaps, find it in his heart to smile at mention of the Erie Canal, contemplating the taxes of the railroads, more than 402 millions last year, but this may be forgiven because it is a tragic joke. He knows, or at least like other sensible and much harrassed executives, he *hopes* fervently that some fine day the people themselves may realize what money-wasters, what unfair competitors these waterways are, how dearly they cost, and how little the people ever get in return. Doubtless, like other country-loving men, he likes to believe that while the people, perhaps for a long time, may go wrong ultimately they will go right. But, it must be admitted, they are a bit slow in the learning.

The original Loomises, those who came over here from somewhere in sixteen hundred and something, were farmers and they fastened their roots firmly in the soil around Windsor, Conn., where they produced what are called Yankees. After a while they moved to the region now known as Herkimer County, New York, where they stayed. So far as we know, they were successful farmers, every generation a little better off than the preceding one; and there, from such stock, came Edward Eugene. His folks were well-to-do, they sent him to private schools, and then to Lafayette college where he earned his LL.D. degree. After a period of visiting and good times in New York, he decided, suddenly, as any sensible American youth might do, to go to work. The announcement caused no astonishment. It was expected.

One of the interesting and often very astonishing discoveries of young men graduated from the college of liberal arts, or what in some institutions is called the general science course, is that when they apply somewhere for a position they have no definite qualification. It is, they find, difficult to reply briskly when asked just what they think they can do. What they need at this crucial moment is guidance and sound advice.

Young Loomis was fortunate in having sensible friends, and one of them got him a job—not a position—as a clerk in the office of the legal counsel representing the Denver & Rio Grande Western in New York. He started reading law, but it wasn't long before he realized that the railroad, and not the legal end of it, interested him. Reading law, after all, is in a way much like learning to play the piano: One has to practice so many absurd and dreary scales before one is permitted to try Chopin or Irving Berlin—just for a contrast. In law you must study torts—and we haven't the remotest idea what a tort *is*—and contracts and other bothersome preliminaries before you get a chance to read the decisions of great minds like Justice Holmes and Taft and others.

So why fool with it? There were enough lawyers then, as there are too many now, while good material for railroad presidencies is notoriously difficult to find. Fortunately for the future of the Lehigh Valley Railroad, young Loomis asked for a transfer, got it, and became a clerk of another kind in the operating department. Soon he was fascinated by the work of real railroading, happy over his escape from a life of whereases, to-wit, this defendant doth ever pray, and all that kind of rot, not to mention writs of *mandamus* and *duces tecum*. Eventually he became chief clerk to the general manager, and lorded it over thirty or more clerks none of whom ever imagined, of course, that their boss would, some day, make the best anti-waterways speech in the nation. The World War proved that heroes are to be found in the most unexpected walks of life.

Loomis, as we said a moment ago, liked railroading. The White Collar phrase didn't mean a thing to him. It would take more than a white collar to hold him back, and then, too, it might not stay white. They seldom do. He holds to his early-day ideas right now about such things. "A stenographer to a superintendent," said he not long ago, "has as good an opportunity as a boy can have. He can study management right there. He has to transmit orders. He learns in a small way how to tell men what to do. He has presumably a good example before him every day. A clerkship is not a dead place when a live man is in it."

He began to climb out of the clerkships. In 1894 he became superintendent of the Tioga division of the Erie with headquarters at Elmira, which means that he had in his territory the coal and lumber properties at Arnot. He held that job for five years, demonstrating upon occasion, and rather dramatically, too, his inborn ability to handle men. In the passing years he was chosen for several pretty important tasks here and there in the East, and finally, in 1900 was sent to the Lackawanna as superintendent. In two years he was vice president and a member of the board of managers, and these offices

The Electric Ship Virginia of the Pacific Mail Steamship Line. Photo by Courtesy of the General Electric Co.

he held until he became president of the Lehigh Valley in 1917.

And that was a fine time for a man to become the president of a railroad, especially in the bottle-neck end of the nation when every possible effort was directed toward getting goods over the country, into ships and across the sea to our fighting friends in Europe. To add to the troubles, his road passed into government control in January, 1918, and when it was returned to its owners in 1920 along came the strikes of the trainmen, the miners, the shop crafts—a hard breaking in for any man.

It would fill a book—the story of railroad men's strife in those days. The Lehigh Valley suffered, of course, but Loomis was out after business, drawing upon his previous experience in quieting the employes, smoothing down here and straightening something over there—logic, intelligence, a sound philosophy of life, a keen understanding of men and how to treat them, rubbing them all the right way, just as one rubs a cat if one wishes to avoid trouble. Before very long the road and its family were going along as they should. And then Mr. Loomis began organizing his forces for the future. Supervisors of employment were created from the ranks, men whom everyone on the road knew. The instructions they received from the big boss were a bit unusual:

"When you question an applicant for a job," said Mr. Loomis, "make him understand that you want to help him, rather than merely to discover how much he does or does not know.

"As far as possible, become the firm friend and adviser of all men on your division. Listen to them sympathetically, try to understand their problems, and aid them in every way possible.

"If a man is not happy in his work, he will not do good work. He will not progress and the company likewise will suffer. It costs a lot to train new men, and they are expensive until they get educated to their positions, which emphasizes the importance of obtaining the right men for the right jobs. Applicants should be aided in deciding which branch of the service they want to follow. Your experience should be of great help to them in this respect.

"It is the contented employe who makes a good railroad."

Hiring men is a business on that line apparently, and after one has landed a job he is taken around and introduced and made to feel right, a wonderful thing as you know if you have ever been through the mill yourself. They have every kind of club and society on that road needed to keep them contented. No road in the country has more or better organizations, and the men — not the management—suggested all of them. They are a big family. They believe in their railroad. They work for it. They get business for it, as they ought to do, and as employes on most of the big roads are doing all the time. They have learned the lesson so many men need to know in every big industry: that the success of the company means their own comfort and happiness. What, after all, shall it profit a man if he gain a principle but starve his family?

A Continued Story

Once in a blue moon, but not oftener, the make-up man on a magazine, printer or editor, does things for which there is no explanation. It happened last month on page 13 in a little story headed "The Railroad Diplomat." Within a day or two the mails and the telephones were overburdened with inquiries. "Somehow," said the first anxious reader, a quiet-voiced man, "somehow I don't seem to see the point." Examination showed that the tale had ended with a passenger putting his feet on the car seat in front of him. Now go on with the story:

"However, the conductor came along, picked a newspaper off the floor and with a smile, slipped it under the passenger's feet, whereupon the passenger remarked, 'I couldn't get better service if I was in a Pullman.'"

There was a perfect example of the diplomat in action! Inferentially, he reproached the passenger for misusing the equipment, yet did it in such a way that no offense was taken. On the contrary, in fact, it appeared as a bit of added service.

Socialism denounces those who have the wealth and leisure which are its ideals.—*Reginald Mitchel Banks.*

Jimmy Gleason and Robert Armstrong, Boomer Brakies in "Oh, Yeah?" Have Just Thrown Tay Garnett, the Director, Into Feather River Canyon, Where He Belonged.

Here's A Railroad Picture

By W. J. Parker

It has been said that newspaper men are required to write about more highly specialized subjects than any other men on earth. If by any chance you know anything about motion pictures, and most of us think we do, you must be willing to admit that directors run a close second to reporters in this respect. You have only to remember the pictures you see to realize this fact.

All of which has been set down here as an introduction to a motion picture turned out a couple of months ago in Hollywood, with a somewhat misleading title, "Oh, Yeah?" Unless you read the reviews in the newspapers you might not suspect, perhaps, that right there, in your own home town you have a chance to see a corking good railroad picture in which the Union Pacific forces and properties took the leading part. Two he-men are featured, Robert Armstrong and James Gleason, better known as Jimmy, and both of them would, but for the intervention of Fate, have made good brakemen.

"Oh, Yeah?" is a Pathe picture. Much of the action takes place in a railroad construction camp, and these scenes were filmed in a rugged section of Northern California. For more than a week, the entire company, with players, Director Tay Garnett and a large technical staff, lived in railroad cars in a community unto themselves. The railroad company not only supplied the Pullmans but also a special diner and club car, with what the actors called one of the crack chefs of the system catering to the palates of a hard working group of men and two or three women.

A large part of the extensive Union Pacific yards in the Montebello territory near the East Los Angeles station was converted into a motion picture studio for almost two weeks while other scenes were being filmed. Since this picture has a background of engines and freight cars throughout the story, all the incidental noises of a great railroad yard added considerable realism and color to the sound atmosphere of the production. As a climax to a period of close cooperation, the RKO Theater in Los Angeles staged a special "Union Pacific Night" during the showing of the picture. Armstrong and Gleason made a personal appearance at the theater in honor of the occasion and a number of highly hilarious "gags" were directed especially for the many Union Pacific workers who attended.

Front View of the Vicious Gleason and Armstrong, Looking South.

The picture is an adaptation of A. W. Somerville's story, "No Brakes", published by the Saturday Evening Post. Somerville, as some of you may know, is a railroad man, the son of another railroad man high in the ranks, and certainly knows his ties and things. But this is an adaptation, you must remember. No camera can produce precisely what a story writer puts down on paper. If it could there would be less work for the director, supervisor and executive, three personages who are perfectly safe in these pages.

In addition to Armstrong and Gleason the cast includes such favorites as Zasu Pitts, one of the most natural creatures in pictures, and Patricia Caron, Paul Hurst, Frank Hagney, Bud Fine and Charles Hamilton. It is essentially a comedy about two boomer brakemen, but it contains some thrilling scenes in a race between some runaway cars and the coming passenger train. The picture provides excellent entertainment for railroad men of every degree, and for John Public himself in all departments of life. Personally, we think Patricia Caron is a bum telegrapher, but only the operators in the house will know it.

Water and Oil for Japanese Engines

Word from Osaka, Japan, says that as a result of experiments the railway ministry has ordered 40 per cent water added to oil used for lubricating locomotive cylinders. The compound does not carbonize when heated and is less harmful to cylinders. Besides, it is expected to save $100,000 a year.

Tay Garnett, on the Left, Said to Be the Only Director Admitting That He Needs Light on Any Subject. See the Lantern?

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TODAY, milady dresses in the comfort and warmth of the luxurious modern stateroom.

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The New Columbia River Bridge at Longview, Wash. In the Background, Mount Rainier, 75 Miles Away, is Visible.

Columbia River Bridge is Opened

By O. H. Barnhill

President Hoover pressed a golden telegraph key March 29 in the White House and by his act opened to traffic a fine $6,000,000 interstate motor highway bridge across the Columbia River at Longview, Washn. The new bridge enables motorists to drive directly down the coast from Seattle, connecting with the Roosevelt and Redwood highways. They will cut out Portland, which is 50 miles above Longview. Residents of that city feel this omission keenly, not caring to be deprived of the privilege of entertaining thousands of motorists yearly.

The new bridge is said to have the longest cantilever span over any navigable stream in the world, 1200 ft. Including approaches, the bridge is a mile and a half long, and its maximum height is 330 ft. The clearance above mean low water is 196 ft., which is sufficient to admit any of the battleships we have been scrapping about scrapping.

Probably it never will be necessary to protect Portlanders with gunboats, as they are able to do their own fighting. The Columbia, however, is large enough to admit a sizable vessel, being one-half mile wide and 37 ft. deep under the Longview bridge, which is 50 miles from the ocean. When it goes on a rampage, the stream sometimes rises 25 ft.

Putting in the foundation for this huge bridge was some job, requiring seven months, while nine months were occupied in erecting the superstructure. The pier foundations go down 20 to 38 ft. below the river bed to gravel-and-boulder stratum. Pier 1, which supports one end of the north anchor span, rests upon a cluster of 216 timber piles. Wooden cribs 80 ft. deep were built in Portland and floated down between barges to Longview. They were lowered into position with a floating derrick and sunk between guide piles through 10 ft. of heavy boulders and basalt. The main channel piers are 90 to 105 ft. high, each resting upon two base blocks of cement 84 ft. long, 39 ft. wide and 16 ft. thick, spaced 25 ft. apart.

The foundation contains 25,000 yds. of concrete reinforced with 413 tons of steel. A million feet of lumber was used in making the cribbing. Ten thousand yards of riprap protects the piers. The approaches contain 1100 cedar piles and 4,000,000 ft. of red fir. Excavation totaled 124,000 yds.

The superstructure contains 12,500 tons of structural steel, of which half was fabricated by the Wallace Bridge & Steel Co. at Seattle and the remainder in the Bethlehem plant at Steelton, Pa.

The roadway over the bridge is 27 ft. wide, sufficient to accommodate three lines of vehicles. It is paved with 7 in. of concrete containing volcanic cinders from Bend, Ore. This material is only half as heavy as stone and makes a lightweight deck. The main trusses will uphold 60 lb. per sq. ft., being designed to support two 20-ton trucks passing abreast. There are two 3-ft. sidewalks strong enough to uphold 40 lb. per sq ft. Silicon steel was used where enough weight was thereby saved to justify the added cost, carbon metal being employed elsewhere.

The Bethlehem Steel Co. had the general contract for the bridge. Pacific Bridge Co. and several other firms handled sub-contracts. The Strauss Engineering Co. designed the bridge and supervised its construction. The project was financed by J. and W. Seligman, New York, and Bradford, Kimball & Co., San Francisco. It took years to obtain permission from the federal government to build the bridge. Plans for the structure had to be approved by the departments of war, commerce and agriculture before congress would pass an act authorizing the project.

Unions Losing Members

Trade unions show a loss in their aggregate membership of 112,272, comparing 1929 with 1926, it is pointed out in a statement just released by the bureau of labor statistics, department of labor, the figures being 4,443,523 in 1926 and 4,331,259 in 1929. Unions in the American Federation of Labor, however, report an increase of 126,430 over 1926, due largely to the renewed affiliation of the large Brotherhood of Railway and Steamship Clerks.

The bureau's latest survey shows 140 organizations having national entity and significance in 1929, with 106 of them members of the federation. In 1926 there were 156 unions, 107 of them being affiliated with the federation.

If you once forfeit the confidence of your fellow-citizens, you can never regain their respect and esteem. —*Abraham Lincoln.*

"Wealth is acquired by embracing an opportunity."—*John J. Raskob.*

A Rotating Seat for Day Coach

A NEW type of reclining coach seat has been placed recently in cars of the Aristocrat, luxurious flyer on the Burlington running from Chicago to Denver. It is possible to rotate this new seat in any direction, thus permitting day coach passengers to face the windows directly and enjoy the scenic beauty of a rail route. The chair rotates on a surprisingly small radius and because of its ingenious design can be placed so that the arm rest is flush with the side wall. The new coach seat, No. 155 PSS, was designed by the railway sales division of Heywood-Wakefield Co. In addition to its rotating features, the 155 PSS has individual backs which may be adjusted separately to any of four restful positions by means of levers at the side of the chair. The same levers return the backs to their original positions (by spring action) easily and quickly. The cushion space in the 155 PSS is increased approximately two inches yet no aisle space is sacrificed.

The cushion construction is of the double deck bucket type. The lower spring construction is the arrangement of springs which has proved, over a period of years, to be substantial for railroad seat construction. The method of fastening springs together in the lower spring construction is vitally important. The upper spring construction is of the "comfy" type. Between the springs and the upholstery material, an exceptionally high grade of genuine curled hair is used. The upper and lower spring sets are fastened permanently together, bellows type of fastening being used.

In the back, the "comfy" type springs are used, and the top of the headrest is slightly concaved in the wood frame. This feature prevents the head from rolling with any side sway of the car while the passenger is sleeping. The headrest is filled with genuine curled hair. The seats used by the Burlington are upholstered in a figured mohair although the manufacturers, the Heywood-Wakefield Co., can supply it in a variety of popular coverings. The 155 PSS rotates on a 43-inch center space and can, of course, be supplied with a non-rotating type of base.

These Portable Seats for Parlor Cars or Day Coaches are Made by the Heywood-Wakefield Co. of Boston and Other Cities.

Safety All the Way

All steam trains on the Pennsylvania Railroad's main line between New York, Philadelphia, Baltimore and Washington are now operating under the double protection of continuous cab signals, supplementing the automatic block signals, except on a few short sections where installation of the cab signal apparatus is of necessity awaiting the completion of other current improvement work.

The total cost of preparing for full cab signal operation on the New York-Washington line, which will be accomplished within six months, will exceed $3,000,000. The next step in the extension of cab signal operation on the Pennsylvania Railroad will be an installation on the Pittsburgh division, between Altoona and Pittsburgh. The company's directors already have authorized an expenditure of about $2,000,000 for this purpose.

Belgian Equipment

The Societe Nationale des Chemins de Fer Belges owns 3,754 locomotives, of which 2,278 are in active service, 596 are undergoing heavy repairs, 456 are undergoing light repairs, and 424 are held in reserve. Classified according to length of service, only 563 locomotives have been in service for less than ten years, 1,774 have been in service for from 10 to 20 years, 1,239 have been in service for from 20 to 30 years, and 239 have been in service over 30 years. The locomotives of the Societe National des Chemins de Fer Belges require heavy repairs every four years, and these repairs require approximately 9,000 hours of work and over two months idleness (9,204 hours work and 69 days idleness in 1927). Upkeep of locomotives cost 49,248,000 francs. (One Belgian franc equals about $0.0278) in 1928, and heavy repairs 89,712,000 francs. It is said that in view of the high cost of upkeep of old locomotives the purchase of new locomotives would be more economical, as a new locomotive suitable for heavy traffic on the Belgian railroads would cost about 1,500,000 francs. The situation with regard to passenger cars and freight cars is on a par with the situation with regard to locomotives.

Foreign Railways

THE German State Railway will curtail locomotive orders during 1930 due to financial difficulties, according to the German press. Orders will be placed for only the most urgent requirements, probably totaling between 70 and 80 instead of 100 as originally planned.

Japanese Government Railways announce reduction in freight rates, effective April 1, 1930. The carload rate system will be replaced by the tonnage freight system. Freight rates on articles of daily necessity are lowered to a greater degree than on other materials.

Gross operating receipts of four main groups of British railroads show an increase of $6,277,784 for the calendar year 1929 as compared with 1928. This result was achieved mainly through increased revenue derived from coal and coke freight traffic, which totaled $14,229,157 more than in 1928. Merchandise traffic receipts rose by $2,599,199; but passenger and parcels revenue declined by $10,550,572.

The Bogota (Colombia) Tramway System is owned and operated by the municipality and is one of the most profitable in the world from the standpoint of patronage. It has been estimated that 70,000 people use the trolley cars daily. The standard fare is five cents. Rolling stock consists of 55 small open cars, capacity 30; five safety closed cars, capacity 30; 20 specially designed single-end one-man cars, capacity 30; 10 new double-drive all-steel open cars, capacity 60; and five freight cars. The open cars are equipped with hand brakes. The closed cars have the latest model General Electric air brakes. The track is of one meter gage and is 45 miles long; 4.0 and 2.0 trolley wires are used. The wire is suspended from steel poles with cross arms. The steam plant of the trolley company is in the city. It drives General Electric Curtis turbines of 3,600 and 5,000 revolutions, respectively, geared to two kilowatt 600 volt current generators. In addition there are four automatic sub-stations. It is estimated that the value of the holdings is from $4,000,000 to $5,000,000. The annual gross revenues amount to approximately $1,000,000. The operating expenses are approximately $600,000, and the gross profits approximately $400,000.

The French State Railway has announced the running of the first train in France equipped with radiophones, according to the department of commerce. This train, which will operate between Paris and Havre, will be fitted out with individual earphones for each passenger. Carriages provided with similar equipment are soon expected to be put into service on other lines of the state railway.

January, 1930, waterborne lumber shipments from Vancouver to Atlantic ports of the United States were 3,011,386 board feet and to Atlantic ports of Canada 992,884 board feet. Comparative figures for January, 1929, shipments to United States Atlantic ports were 3,507,523 feet, comparative figures to Canadian Atlantic ports not available.

Mr. Metz Steps Out

By ELIZABETH HAWKINS

J. R. Metz is fond of walking. In fact, that is his vocation as well as his avocation, and he hasn't lost his amateur standing by participating in either of the C. C. Pyle "bunion derbies."

Metzie, as the station agents call him, is an official track walker for the Pacific Electric Railway. His beat takes him as far north as Owensmouth and San Fernando, as far seaward as the beaches, as far inland as the grape lands of Etiwanda and the citrus groves of Riverside and Santa Ana.

He is a cheery fellow whose trousers bag at the knees, whose hat is faded and shapeless, and whose skin is leathery from constant exposure. His walk is a peculiar, monotonous gait that takes him across bridges and over hills as he scans the ties for rotting wood, loose bolts, or a shifting bit of banking. He talks to himself, "Just to keep from getting lonely out on the rails," he admits in a low and expressionless voice. His blue eyes are half-closed from squinting at the sun, and the tip of his nose is always red from sunburn or cold winds.

"You see, I'm not very large," he said, stretching to the highest bit of his five feet five inches. "I was told to come to California for my health. This job keeps me out of doors, and despite the sometimes uncomfortable weather, it's a mighty good job."

"Another thing, don't let anyone tell you to reduce by walking," he advised. "When I began this I weighed 117 and now I weigh 151 pounds. You can't lose weight that way. I know that people laugh at me, but when my vacation comes, I always take a long jaunt through some part of the mountains. You know what they say about 'a postman on a holiday.'"

Every three months, Metz walks in on most of the towns close to Los Angeles. There are no chamber of commerce groups to hand him keys to the city and no welcoming speeches, but he knows the beach towns as well as the valley communities. Twice a year he covers the entire 1600 miles of the system. This gives him a total of more than six miles a day for the entire year. He has been doing this since 1917, and in those 12 years has walked 27,840 miles.

Such an excellent walker is Metz that one of the big shoe companies supplies his shoes for the privilege of having his cast-off footwear. The worn-out specimens are placed in a window of one of the large branch stores with this sign: "This pair of shoes has walked 1600 miles in six months."

Good Thing to Remember

A country banker at Lakin, Kan., on the Santa Fe, puts a punch into the advertising he runs in the town paper, the Lakin Independent. It carries a fine lesson in safety first. Read it and ponder:

HE OVERLOOKED ONE

He used a toothbrush, wore his rubbers, slept with the window open, ate plenty of green vegetables, had his tonsils removed, cashed in his appendix, never smoked or got drunk, took plenty of exercise, and felt sure he was going to live 100 years. But he has gone hence, mourned by 17 specialists, three gymnasiums and a flock of health food manufacturers. He had forgotten that trains don't stop at grade crossings! Moral: You may follow all plans for Thrift—and then put your money in a tin can! Deal with us, and be safe.

Silent Railroads

For many years past, New York and other large cities of the world have been trying to decrease the volume of noise, with little success. Word now comes from Singapore of an experiment which, if perfected, will reduce the noise of railroads. This is through the simple method of placing strips of rubber between the ties and the rails. It has proved such a success that the company contemplates installing it over the entire system.

Pretty Good Odds

Only one passenger out of every 280 million carried in 1929 on the street cars of the United States died as a result of injuries suffered while riding on the cars! Those are the startling figures contained in a recent announcement made by the American Electric Railway association.

THE PENNSYLVANIA RAILROAD

SUMMARY OF ANNUAL REPORT FOR 1929

THE 83RD ANNUAL REPORT of The Pennsylvania Railroad Company, covering operations for the year 1929, will be formally presented to the stockholders at the annual meeting on April 8, 1930. The report shows that net income in 1929 exceeded that of any year in the company's history and was $18,952,324 greater than in 1928. Last year was the fifth successive year in which the net income exceeded that of any previous year.

Net income, amounting to $101,378,518, was equivalent to 17.64% upon the outstanding capital stock at the close of the year as compared with 14.69% upon the amount outstanding at the close of 1928. Net Income per share (par $50) was $8.82, compared with $7.35 in 1928.

OPERATING RESULTS

	1929	Increase over 1928
TOTAL OPERATING REVENUES were	$682,702,931	$32,135,615
TOTAL OPERATING EXPENSES were	493,150,592	12,978,958
LEAVING NET REVENUE of	$189,552,339	$19,156,657
TAXES amounted to	40,518,595	2,672,238
EQUIPMENT, JOINT FACILITY RENTS, etc., amounted to	15,894,118	451,779
LEAVING NET RAILWAY OPERATING INCOME of	$133,139,626	$16,032,640
INCOME FROM INVESTMENTS AND OTHER SOURCES amounted to	48,791,500	4,255,842
MAKING GROSS INCOME of	$181,931,126	$20,288,482
RENTAL PAID LEASED LINES, INTEREST ON FUNDED DEBT AND OTHER CHARGES amounted to	80,552,608	1,336,158
LEAVING NET INCOME (Equal to 17.64% on Capital Stock) of	$101,378,518	$18,952,324

After providing for the payment of 8% dividends to the stockholders and for sinking and other reserve funds, $48,925,596 was credited to Profit and Loss account.

* * *

Last year's satisfactory results were attained through the helpful cooperation and friendship of the shippers, patrons and stockholders and the continued efforts of the officers and employes to conduct the company's service to the public expeditiously, efficiently and economically.

W. W. ATTERBURY,
President.

Philadelphia, Pa., March 31st, 1930.

THE PENNSYLVANIA RAILROAD

Carries More Passengers, Hauls More Freight
Than Any Other Railroad in America

SHIP AND TRAVEL VIA PENNSYLVANIA

Stockholders may obtain copies of the Annual Report from J. Taney Willcox, Secretary, Broad Street Station, Philadelphia, Pa.

Sir Henry Has Some Fine New Shops

Efficiency and Economy Are Emphasized at Pt. Charles

By Earle W. Gage

THE NEW motive power plant of the Canadian National Railways at Point Charles, Montreal, was built to provide the most efficient servicing of motive power with the utmost in economical operation, another commendable item in the fine record of Sir Henry Thornton in rehabilitating the railways of the dominion.

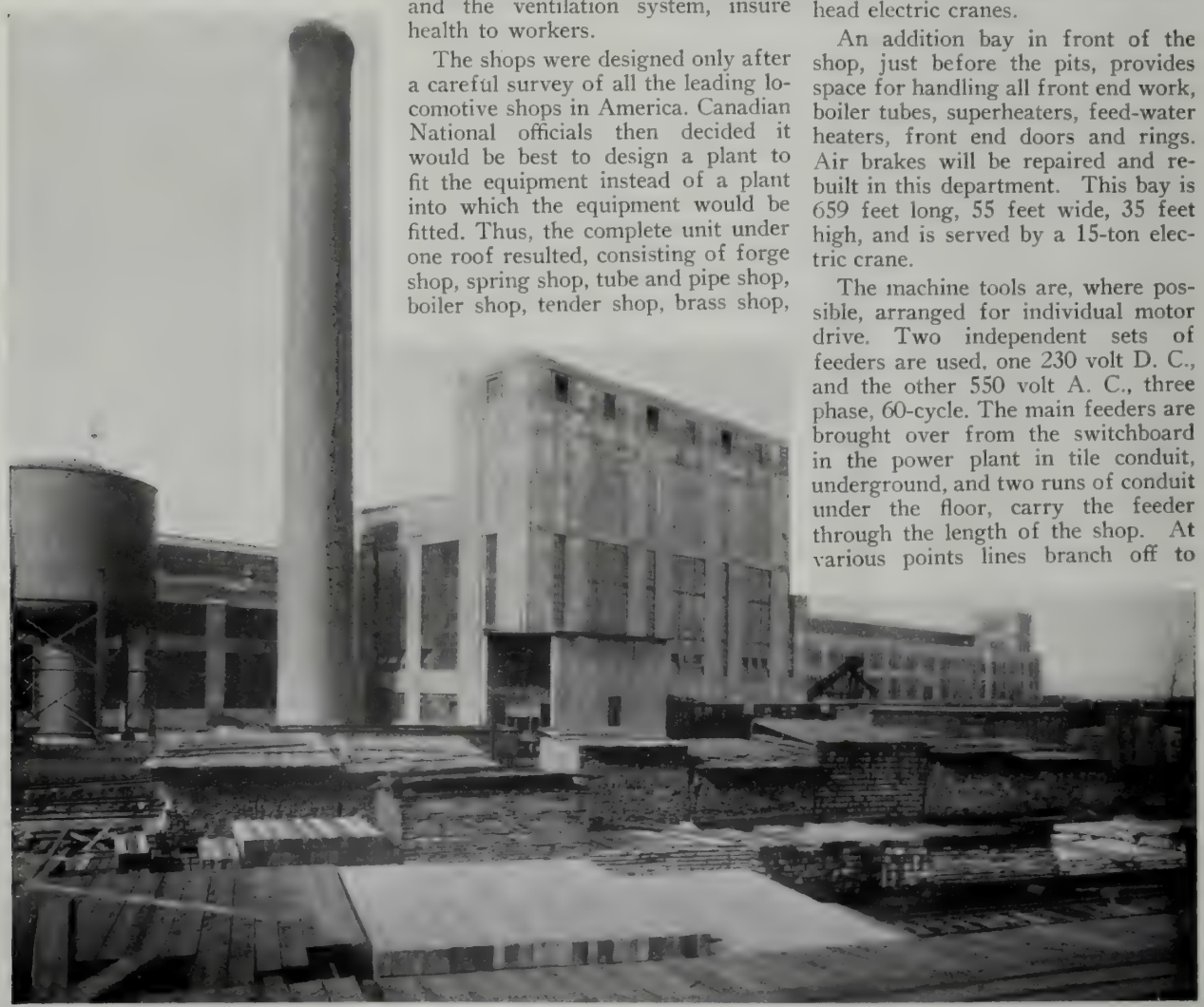
The new shops are 1,056 feet long and 265 feet wide, a dozen or more of the important departments centering in the main building. The brightness of the interior is a revelation to men familiar with such places. Convenience of arrangement is emphasized. All machines have been spotted to insure best results, to reduce time in handling material, prevent wasted effort, and to permit the mechanics to engage in their work under the most favorable conditions. The lighting, both natural and artificial, and the ventilation system, insure health to workers.

The shops were designed only after a careful survey of all the leading locomotive shops in America. Canadian National officials then decided it would be best to design a plant to fit the equipment instead of a plant into which the equipment would be fitted. Thus, the complete unit under one roof resulted, consisting of forge shop, spring shop, tube and pipe shop, boiler shop, tender shop, brass shop, light machine shop, heavy machine shop, and locomotive erecting shop. The design is unique, and does not correspond with any existing motive power plant.

The erecting shop has 34 pits, the bays being 24 feet centers; length, 755 feet; width, 85 feet; height, 56 feet to the roof truss. This giant room is served by a 200-ton overhead electric crane, equipped with 10-ton auxiliary crane, and two 15-ton overhead electric cranes.

An addition bay in front of the shop, just before the pits, provides space for handling all front end work, boiler tubes, superheaters, feed-water heaters, front end doors and rings. Air brakes will be repaired and rebuilt in this department. This bay is 659 feet long, 55 feet wide, 35 feet high, and is served by a 15-ton electric crane.

The machine tools are, where possible, arranged for individual motor drive. Two independent sets of feeders are used, one 230 volt D. C., and the other 550 volt A. C., three phase, 60-cycle. The main feeders are brought over from the switchboard in the power plant in tile conduit, underground, and two runs of conduit under the floor, carry the feeder through the length of the shop. At various points lines branch off to



Principal Parts of the Canadian National's New Plant and Shops at Point Charles, Montreal, Recently Erected.

NOW A DAY coach seat that rotates as well as reclines

AT last—a de luxe day coach seat which rotates—a seat which permits passengers to fully enjoy all the scenic advantages of your rail route. This remarkable reclining and rotating seat, the 155 PSS, was first developed for day coaches in the Aristocrat, the Burlington's Chicago to Denver flyer. It is well worth your serious consideration because it delivers more comfort and luxury per dollar of investment than any other style yet built . . . . . Groups of passengers can turn this new H-W seat so as to enjoy a sense of privacy never possible before in a day coach (see upper right illustration). The 155 PSS rotates on a surprisingly small radius, too. Its scientific design permits the arm rest to be placed flush with the side wall, yet available cushion space is actually increased two inches. The individual backs recline to four restful positions by a slight pressure on handily located levers at the sides of the chair. The new 155 PSS seat can be reclined and faced in various ways, yet the comfort of any passenger is not interfered with. . . . . For these and many other reasons it will pay you to investigate the new 155 PSS, the up-to-the-minute day coach seat. Just ask any Heywood-Wakefield sales representative for the information.

HEYWOOD-WAKEFIELD

Boston, Massachusetts

516 West 34th St., New York City
J. R. Hayward, Liberty Trust Bldg., Roanoke, Va.
H. G. Cook, Hobart Bldg., San Francisco, Calif.

311 Railway Exchange Bldg., Chicago, Ill.
A. W. Arlin, Delta Bldg., Los Angeles, Calif.
The G. F. Cotter Supply Co., Houston, Texas

The Railway and Power Engineering Corporation
133 Eastern Ave., Toronto; Montreal; Winnipeg, Canada

serve machines, and switching equipment makes the entire system responsive to every need.

The floors in the main buildings are cement, covered with red pine, creosoted wood blocks. The blacksmith shop and spring shop have cinder floor, with cement truck runways throughout. The floor of the tender shop is of cement with metallic hardened surface.

The shop is arranged with four incoming and outgoing tracks, between the tender, the boiler shops, on the east side, and the machine shop and erecting shop, on the west side. Each bay has an overhead electric crane covering these tracks, which insures easy access for unloading all material. Locomotives entering the shops are stripped on the incoming tracks, which are surrounded by four large cleaning vats and two tender inspection pits.

A pipe tunnel runs across the four bays of the shop, this being 8 feet wide and 6 feet 6 inches high. The pipe installation is overhead, with the exception of the pipes coming from the power house through the tunnel. The pipe work through the entire shop is free from joints, being welded throughout; this gives quick access to the whole piping system, and makes it easy to maintain. The pipe color scheme is: Acetylene, bright red; gasoline, orange vermillion; city gas, dark red; air lines, dark lead; oxygen, pea green; live steam, bright yellow; exhaust steam, light brown; vacuum lines, dark drab; oil lines, black; drinking water, white; hydraulic pressure, light blue; washout, dark blue; plant water, plain green, and electric conduits, aluminum.

The entire shop is piped with compressed air, 125 pounds pressure per square inch; service water, 60 pounds; steam, 160 pounds; drinking water, direct from city mains; hydraulic pressure, 1,500 pounds; acetylene gas, oxygen, manufactured gas and fuel oil.

The arrangement of the various departments of the shops insures utmost efficiency, and creates one unified industrial plant. The blacksmith and forge shop, for example, is situated at the west end of the shops, and runs directly across all four bays. The shop is 265 feet long, 85 feet wide, and 32 feet high, and is served by a 10-ton electric crane. The shop is equipped with down-draft forges and oil gas furnaces, the furnaces and steam hammers being served by two 4,000-pound, self-supporting jib cranes, and two 6,000-pound, self-supporting jib cranes.

The spring shop at the south side of the building, is 54 feet wide and extends from the forge shop 130 feet east. The floor is of cinders, with concrete foundation for the various furnaces and tools. All furnaces are operated by electric power. One special feature is that the furnaces of direct heat type are used for "drawing" the springs after quenching; this operation is more often handled by a salt bath.

Bill Sergeant, Locomotive Inspector, Canadian National. He Has 62 Years Railway Service on His Record.

The tender shop is a continuation of the two machine shop bays. The main bay is 312 feet long, 70 feet wide, and 40 feet high, and is equipped with a 15-ton electric crane. In this department all truck and wheel repairs are made.

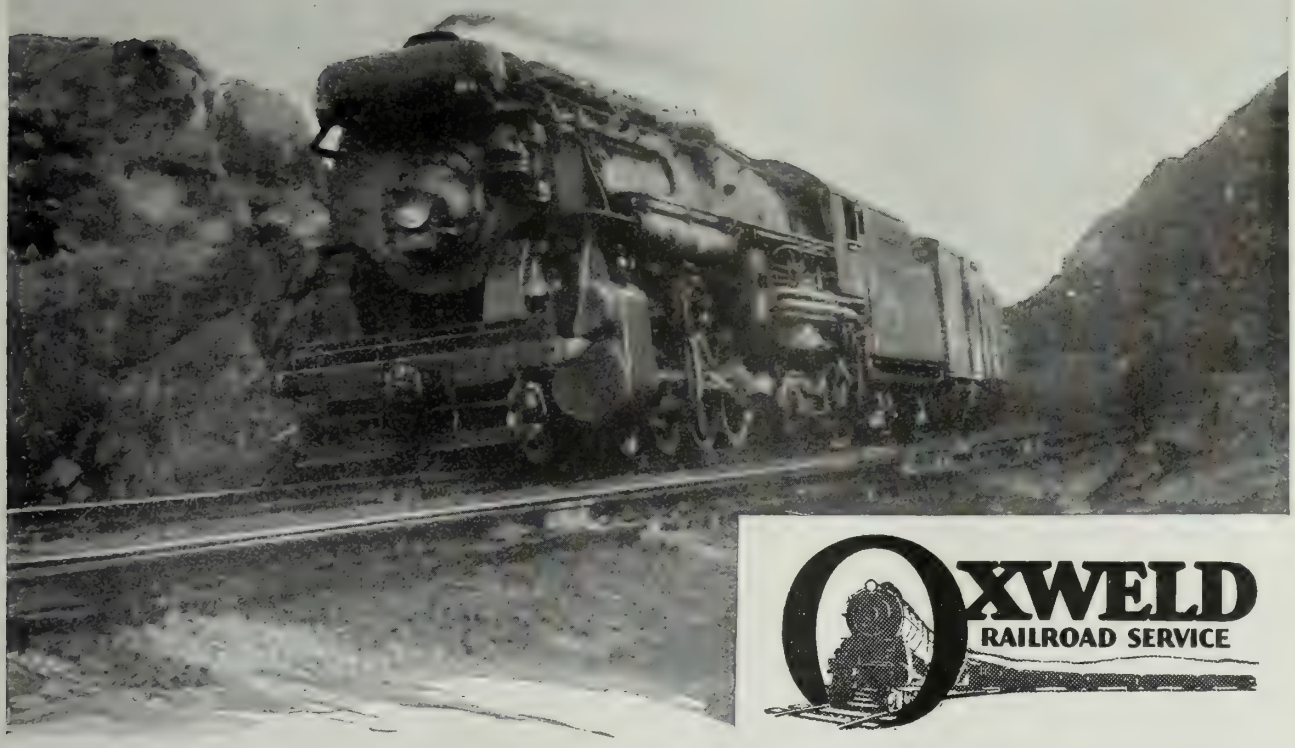
The tender shop is especially designed for reconditioning tenders, and is arranged to take care of the washing down of tenders. A special feature is the concrete water tank under the floor equipped with motor-driven, centrifugal pump. The pump is piped to a system of water-cranes, so that, for a test, tenders are simply filled from the special tank, to which the water is returned after the test is concluded.

The boiler shop is a continuation of the two erecting shop bays. The main bay, 216 feet long, 85 feet wide, and 56 feet high, is equipped with a 40-ton electric crane, constructed on the same runways as the 200-ton crane, in the erecting shop, and capable of passing from the boiler shop through the entire erecting shop without interruption. The two 15-ton cranes, in the erecting shop, may pass through the boiler shop, an arrangement which makes a flexible operation possible. The second bay of the boiler shop, where the light boiler work is done, is a continuation of the outside erecting shop. This is 240 feet long, 55 feet wide, and 35 feet high, and is served by a 15-ton electric crane, operating on a continuation runway from the erecting shop. The boiler shop has a rivetting tower, 36 feet by 70 feet high, which is equipped with a 25-ton electric overhead traveling crane.

The machine shop consists of two bays, a heavy machine shop bay and a light machine shop bay, both running parallel with the erecting shop. The first bay is 659 feet long, 70 feet wide, and 35 feet high, served by a 15-ton electric crane. The light machine shop bay is of the same length and height, but only 55 feet wide. It is equipped with many large, up-to-date machines, which will effect economy and increase production. The Canadian National Railways are now pioneering a number of projects, among them a new method of grinding locomotive journals and crank pins, a special machine being built for the purpose.

The power house, serving as the heart of the great plant, has many interesting features, and is as clean as if presided over by a housewife. It is practically smokeless and was designed to burn slack coal. The firing floor and engine room are 14 feet above the ground level. There are two complete boiler units installed, with space for additional power. Two 1,000 h. p. Babcock and Wilcox Cross Drum type boilers are used, which have 10,149 square feet of heating surface, 90,000 pounds maximum evaporation an hour, and 350 pounds per square inch working pressure. The automatic stokers and pulverizers have a peak capacity of 6,600 pounds an hour. The coal handling equipment is the bucket-conveyor type, capable of handling 40 tons an hour, equipped with crushers, magnetic separators, and scales. The engineroom contains two vertical steam-driven air compressors, each of 2,500 cubic feet of free air a minute capacity, and one 1,000 D. C. Turbo-driven electric generator and one 500 A. C. generator.

THERE IS A REASON FOR RENEWED CONTRACTS



OXWELD RAILROAD SERVICE

YEAR after year a majority of the Class I railroads in the United States contract for Oxweld Railroad Service. For 18 years the facilities of this organization have been enlarged constantly. Its activities extend over more than half the entire railway trackage in the country.

And the reason?

Oxweld Railroad Service supplies an essential in railroad maintenance—efficiency in the application of the oxy-acetylene process. Wherever the oxy-acetylene process is used—whether it is in the building up of a battered rail or the scrapping of a locomotive—Oxweld Railroad Service reduces the time and cost of the operation.

Write and let us explain the purpose and functions of this service.

THE OXWELD RAILROAD SERVICE COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

NEW YORK
Carbide and Carbon Bldg.

CHICAGO
Carbide and Carbon Bldg.

Senator Howell's Rate Bill

A GENERAL revision of railroad rate regulation by a complete rewriting of Section 15-a of the Transportation Act is proposed in a bill introduced in the senate by Senator Howell of Nebraska, a member of the senate committee on interstate commerce. In explanation of the proposed bill Senator Howell gave out this statement March 24:

It is generally agreed that railroad rate regulation under section 15-a on the basis of valuations made under section 19-a, is a failure.

The Interstate Commerce Commission declared officially and candidly in the O'Fallon case that if its construction of the law could not be sustained, the law would be found unworkable. Since the Supreme Court, by its opinion in the O'Fallon case, required the commission to follow a construction of the law which did make it unworkable, in the judgment of that well-informed body, there is a clear duty imposed on congress to amend the law.

In S. J. Res. 104, recently introduced by me, it was proposed to write into law the principles and methods approved by the commission in its report in the O'Fallon case. This resolution having been referred to the commission, all the commissioners except one joined in recommendations for new legislation set forth in the letter of Jan. 21, 1930, from Commissioner Eastman, chairman of the legislative committee of the commission, to Senator Couzens, chairman of the senate committee on interstate commerce.

Since the receipt of this letter it has been sought to draft an amendment to section 15-a which would provide for a basis and method of regulating railroad rates, conforming to the practical necessities of adequately protecting the public interest and providing a practical, economical method of administration of the law by the Interstate Commerce Commission so as to utilize the results of the extensive investigations carried on by the commission in the valuation of the railroads under section 19-a.

The bill provides for a complete rewriting of section 15-a and for fixing rates upon a prescribed rate base which can be accurately determined instead of upon the indefinite, fluctuating, uncertain and impractical basis of a valuation of individual railroad properties.

The rate base is to be computed, as recommended by the Interstate Commerce Commission, by adding to the original valuation of a carrier property made by the commission under section 19-a (at 1914 unit prices), the original valuation of the land of the carrier and by then adding or deducting the subsequent net increase or decrease in investment and by deducting the proper amount of the depreciation reserve of the carrier and then adding a reasonable allowance for working capital.

The major items in such rate base have already been determined and such a rate base can be determined from time to time as often as may be necessary without undue expense or delay. The commission, the railroads and the public can tell at any time with substantial accuracy just what the amount of such a rate base is for an individual railroad or for a group of railroads.

The commission is then authorized and directed to prescribe rates which will provide for the carriers, as a whole in a designated rate group or territory, a fair return upon the aggregate rate base, computed from the individual rate basis of the carriers concerned. Recognizing, however, as is recognized in the present law, that rates so determined in order to be uniform will enable some of the carriers to receive a net railway operating income unreasonably in excess of a fair return, the bill provides that half of the excess income, in excess of 6 per cent upon the rate base, shall be held in trust for the United States and half in trust for the investors in the securities of the carrier.

This provision for trusteeship of the excess income has been written on an entirely different principle from that utilized in the present law, which provides for the recapture of one-half of the excess income by the United States and for its use in a general railroad contingent fund in aid of the weaker railroads.

The present bill provides that the one-half of excess income held in trust for the United States shall be expended with the approval of the Interstate Commerce Commission in providing designated extensions or additions to or betterments of the railroad property which earned the income. But such expenditures are to be charged to a separate capital account entitled "public investment account," and this public investment, together with accretions at the rate of 4 per centum will not earn return for the private investors in the railroad. In other words, as a result of this reinvestment of surplus earnings in a railroad property, the public service will be improved without capitalizing the public contribution against the public for the benefit of private investors. This provision gives to the management and to the private investors in a railroad the distinct benefit out of operations which produce surplus earnings, thereby retaining the incentives of efficient operation, but on the other hand the public served by the railroad likewise will ultimately receive substantial benefits.

The remaining one-half of excess income is to be held in trust for investors in a reserve fund similar to that provided in the present law, a reserve fund to secure the payment of dividends, interest or rent to be accumulated until it equals 5 per cent of the rate base. Under the present law, after the 5 per cent limit is reached, the remainder of this one-half excess income can be used by the carrier for any purpose.

The proposed amendment provides that after the 5 per cent limit is reached, the remainder of the excess income shall be used for the purpose of reducing the fixed obligations of the railroad, either by retiring bonds or by their purchase in the open market. The amended provision, therefore, provides a benefit to be shared by investors and the public by the retirement of bonds. The security of the stockholders is improved, and the credit of the railroad is improved, while at the same time, the fixed charges which must be met out of revenues are reduced. As railroad credit improves, funds can be obtained at a lower rate of interest, thereby reducing the amount of return which the public may be required to pay as a fair return upon the capital invested.

It should be understood that the provisions of the proposed bill for fixing rates on the basis of a certain and readily ascertainable rate base do not involve an attempt by legislation to annul the doctrine of the Supreme Court as to the final test of the validity of rates fixed by public authority. The Supreme Court has held that a public utility is entitled as a matter of constitutional right to just compensation for the use of private property which is devoted to public use. The proposed amendment of section 15-a provides that if any carrier shall claim that as a result of rates fixed in the manner provided, the carrier is not receiving an adequate return to provide just compensation for private property used in public service, the carrier can petition the commission for a revision of rates, which petition shall present a schedule of proposed substitute rates and its estimate of the net railway operating income to be obtained therefrom and a detailed statement showing the basis of the carrier's claim.

It is made the duty of the commission to proceed with all possible expedition and after considering any possible revision of existing divisions of joint rates, if the commission finds the carrier is entitled to relief, it is required to make such a revision of rates as will, so far as possible, enable the carrier to earn just compensation. Thus the protection of the constitutional rights of the carriers is specifically entrusted to the commission and, of course, if the commission fails in its duty, then recourse may be had to the courts.

But on the other hand a practical method for fixing and revising rates in general upon a stable and easily ascertained rate basis has been substituted for the methods heretofore provided which have been proved to be unworkable. The commission is not required to attempt the impossible task, first of finding an original valuation for every railroad in the country and then revaluing every individual railroad again each year, in order to obtain a basis for general rate making and a rate basis for recapturing from an individual carrier of part of its excess income to be used for the benefit of other carriers.

The revised treatment of excess income in itself should encourage a ready cooperation between the commission and the carriers in determining the amounts of such excess income instead of the hostility inevitable under the present law.

There is a vast difference between regulating the use of surplus earnings for the benefit of the railroad earning the surplus and for the benefit of the public served by that railroad, and requiring a railroad to pay out one-half of such surplus earnings for the ultimate benefit of other railroads and that part of the public served by such railroads.

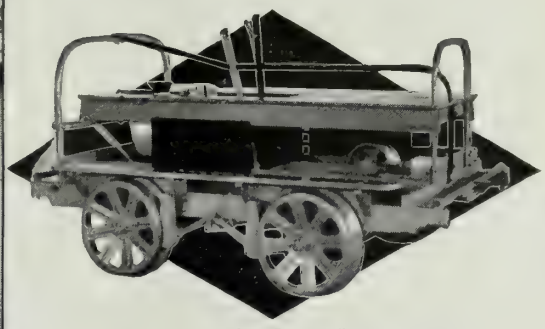
In order to provide for a speedy and economical termination of the interminable proceedings now required under the present law for the valuation of railroad properties, provision is made in the proposed amendment, first, that any carrier may elect to accept the application of the provisions of the new law to the period from 1920 to 1930, that is, its

(Continued on Page 46)

ACHIEVEMENT

The Newark Bay Bridge, One of the Longest Four-Track Railroad Bridges in the World

Spanning mighty bodies of water, boring its way through mountain chains, beating its way through the wilderness—the triumphant march of the railroad track is never stayed until the goal is reached. Achievement after achievement . . . in one of the most stirring epics in American history.



A2—Heavy Duty Section Car
6-11 H. P.—Steel Girder Frame
Seats 12 Men

Achievement, no matter how spectacular, is based on knowledge, carefully weighed and patiently applied. In motor cars, for instance, no achievement is so remarkable as this: One manufacturer made more than half the motor cars now in service! Fairmont.

To be proclaimed Leader in such a highly competitive field is indeed an achievement. But, here, again, knowledge and research were behind it—applied toward the lowering of maintenance costs. That Fairmont engineering has attained this goal and established records of Lowest Over-All Cost is known throughout the Railroad World. Evidenced by the preference shown above.

For efficiency and economy, put Fairmont Railway Motor Cars to work.

FAIRMONT RAILWAY MOTORS, INC.

FAIRMONT, MINNESOTA, U. S. A.
General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO
District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans
FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles and safety appliances

Fairmont Mudge
Performance on the Job Counts

THE · RAILROAD · WORLD · KNOWS · FAIRMONT

Howell's Rate Bill

(Continued from Page 44)

excess income may be determined according to the revised law and held under the trusteeship provided therein, instead of following the former provision for recapture of one-half of such excess by the government.

In case a carrier does not elect to have the new law applied to the period prior to 1930, the commission is authorized to make agreements with carriers concerning the amount of excess income to be recovered under the old law. Or if such agreements are found to be impossible, the commission is directed to proceed to enforce compliance with the original law and to recover the excess income payable to the commission thereunder, together with interest upon the same.

In the interests of administrative efficiency and in order to balance fairly the results of good and bad years, the proposed amendment also provides for the determination of excess income in periods of two years, instead of annually as provided in the present law.

The foregoing is merely an outline and not a complete statement of the provisions of the proposed amendment of section 15-a. The bill is offered not with the idea that it provides a complete or final solution of the problems presented through the demonstrated inadequacy of present legislation. It is, however, highly important that congress should proceed at once to deal with this vital problem.

Large appropriations are required each year to carry on the work of the Interstate Commerce Commission under the present law. The money expended in the past has produced results which may be utilized profitably in future regulation of interstate commerce. But to continue the present expensive investigations and proceedings for the hopeless purpose of trying to regulate transportation rates in accordance with the requirements of the present law is simply to provide deliberately for an unnecessary waste of public and private funds.

There is, in my judgment, little justification for the passage of another appropriation for the work of the Interstate Commerce Commission prior to a revision of the law necessary to determine what the commission ought to do and what methods should be utilized in order to fix just and reasonable rates promptly, practically and effectively. Congress has not yet conferred upon the commission power so to act. Congress has imposed upon the commission an impossible task, at least as the law has been interpreted by the courts. It is, therefore, the immediate duty of congress to revise the law. It is the purpose of the proposed bill to point the way to such a revision in a manner promoting the vast public interest in these properties, while at the same time providing ample protection for all private interests also involved.

Fireman to the Rescue

Passenger train No. 3 of the Milwaukee road thundered southward toward Excelsior Springs March 23 with a dead engineer at the throttle. Only the quick action of the fireman in stopping the train averted a rear-end collision with a freight train.

The incident became known when the family of the engineer, George F. Robinson, 68 years of age, expressed the wish to give the fireman, E. E. Milburn, credit for saving Mr. Robinson's perfect 49-year record with the railroad.

Now the Heroic Brakeman

J. E. Flack, yard brakeman at Terre Haute, Ind., to whom the Pennsylvania Railroad recently awarded a service medal for heroic conduct, performed another unselfish act, March 23, when he assisted in saving a burning house. He and Dan McKeen, also a brakeman, were on a draft of cars being delivered from one part of the yard to another. This was at midnight. Along the right of way they saw a house on fire. They ran to it, awakened the sleeping family, went to neighbors and phoned to the fire department. The blaze was extinguished and the loss was much less than it might have been had Flack and McKeen not acted quickly.

Engineer Died For His Duty

Charles A. Bell of Mansfield, engineer of the fast New York-Detroit Limited No. 105 of the Pennsylvania Railroad, averted a bad pile-up at the cost of his life when his engine left the rails near Spring Mill Junction, six miles west of Mansfield, O., March 23.

With only a fraction of a second to choose between leaping for his life and facing sure death in his cab, Bell remained at his post to set the air brakes when he felt the heavy engine hit the ties and careen toward a ditch at the side of the right of way.

The setting of the brakes stopped nine Pullmans which made up the train, and about 80 sleeping passengers were saved from possible death or injury.

New Quebec Railway

E. W. G.

In connection with the gigantic development now taking place on the narrow peninsula between Lake St. Francis, 25 miles west of Montreal, a new railway system is to be rushed to completion to care for the traffic needs of the new industrial center which will arise as the result of the 2,000,000-horsepower Beauharnois Power Corpn. enterprise. R. O. Sweezey, of Montreal, president of the electrical generating company, has also been named president of the recently formed $500,000 Beauharnois Railway Company, whose capitalization will be increased from time to time, as new demands may dictate.

The Quebec legislative act authorizes the company to construct, maintain and operate by steam or electricity, or other motive power, a standard gauge railway on both sides of the new 15-mile canal, at either or both ends. Likewise, authority to construct branch lines and extensions at various places along the line and to connect with all other railways built or to be built in the county of Beauharnois, is given.

The same act provides that the Beauharnois Railway Company may enter the navigation business, by acquiring and operating vessels for passengers and goods, and for the construction of wharves, warehouses, elevators, tramways, etc. The securities issued are limited to $50,000 a mile of railway.

Model industrial centers, pleasure resorts, etc., are to be constructed on the land either side of the new canal, which will provide energy to develop electric power and convey ships around the dangerous rapids in the river. This waterway is being projected at a cost of about $16,000,000, and will be opened in 1932, when the first 500,000-horsepower of electric energy will be generated at the power plant at the eastern terminus.

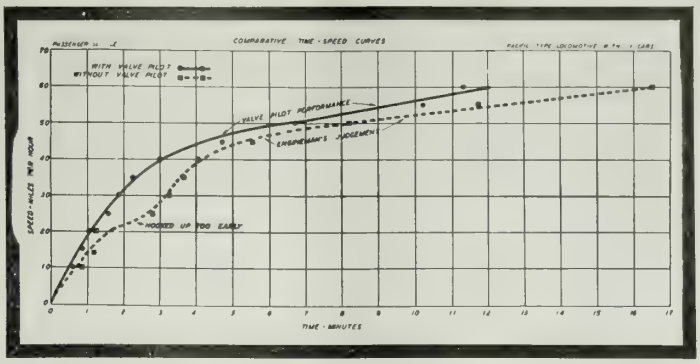
Carolina Road Defies the I. C. C.

Directors of the Piedmont & Northern Railway have ordered its officers to begin construction immediately of a link connecting the railway's line in North Carolina and South Carolina despite refusal of the Interstate Commerce Commission to sanction the project.

At the same time the directors adopted a resolution asserting their intention to extend the railway in North Carolina from Charlotte to Winston-Salem, and Durham. Permission to make this extension has also been denied by the commission.

Education is not an episode limited to the few years at school. It is a life-long process which yields its fruits only on condition that you never break it off, and that each stage in it grows naturally out of the stage that went before and leads as naturally to the stage that follows.—*Prof. L. P. Jacks of Oxford.*

More about Acceleration!



Actual comparative curves

Time lost during acceleration must often be made up by **overspeeding.**

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LOCO VALVE PILOT

ensures a quick, steady pick-up to full speed.

In the diagram shown above, the Valve Pilot train saved time and gained distance during the period of acceleration to 60 m.p.h.

Apply similar gains to your regular daily runs—and see what the LOCO VALVE PILOT will do for you.

VALVE PILOT CORPORATION

230 Park Avenue

NEW YORK

Eugene D. Nims
Chairman, St. Louis Covered Wagon Celebration.

Covered Wagon Epic

(Continued from Page 8)

Through the cooperation of the superintendents of the various schools the story of the first covered wagon train will be featured April 10 in history classes, and prizes have been offered for the best papers by boys and girls in all states through which the trail passes, on the history of the trail.

If it had not been for the late Ezra Meeker it is doubtful whether St. Louis people or anyone else would have remembered the old covered wagon days. He it was who called attention to the fact that the historical significance of the old Oregon Trail was about to pass out of memory. Meeker traveled the 2,000 miles in a covered wagon when a youth, and in 1896, at the age of 76, made the trip again with an ox team. He continued east to Washington where he greeted President Roosevelt. He made the trip again in 1910 at the age of 92, and until his death in December, 1928, was one of the leading sponsors of the Oregon Trail Memorial Association which he founded. It was his great desire to participate in the celebration now planned, for which he had worked for years. The association is taking up the work of celebrating the anniversary of the first covered wagon train, where he left it at his death.

Acres of Paint

Thirty-five workmen of the Canadian National Railways have been at work repainting the Quebec bridge for the past three years. The work of applying paint by means of spray guns to 210 acres of steel surface was accomplished as the men climbed over girders 300 feet above the St. Lawrence River. The job required 7,800 gallons of paint. Now the bridge shines forth in brilliant green, visible for miles around.

News From Canada

E. W. G.

Transportation engineers wrote a new record in the recent completion of the Nipawin bridge, the Canadian Pacific Railway's new gateway to the fertile Northern Saskatchewan district, an empire as vast and prolific as many a European empire. This is counted the most important railway-road bridge in Western Canada.

The Nipawin bridge spans the Northern Saskatchewan River 75 miles east of Prince Albert, and carries the rails of the C.P.R. as well as a lower deck carrying the government's highway.

More than two years were required to complete the bridge, and about $2,000,000 was involved. A steel structure 1,907 feet long, towering 150 feet above the swift current of the river, the construction of this mighty span was a feat in engineering skill of a high order. It throws open a new empire to Prince Albert on the Tuffnell-Prince Albert branch of the C.P.R., a line on which further construction is to be undertaken this year. From Prince Albert construction is to start on the long line across Northwestern Saskatchewan to Lac la Biche, Alberta.

At the last session of the Canadian parliament, the C.P.R. received authority to construct another line, which will start from the Nipawin bridge and stretch to Island Falls on the Churchill River, where the great hydro-electric project of the Churchill River Power Company is under construction to provide power to the mining operations at Flin Flon, Manitoba. The other line, with Prince Albert as a starting point, will reach even farther north, crossing the Churchill River and extending to Foster Lakes. This is about 100 miles west of the great expanse of water called Reindeer Lake.

One of the most extensive improvement projects of the year is the improved and modernized car ferry facilities which the Canadian National Railways, at a cost of $3,800,000, is constructing to serve Prince Edward Island, that prolific island off the mainland of Eastern Canada, which, due to natural barriers, must needs have all passenger and freight traffic, coming and going, transported across a nine-mile strait, which separates the isle from the mainland.

Under the pressure of increased traffic, the enlargement of the car ferry terminals, to insure more efficient handling of passenger and freight cars, became necessary. The ferry operates between Cape Tormentine, N. B., and Port Borden, P.E.I. A new car ferry ship, costing about $2,000,000, which, when put into service is to be one of the most modern of the type, and terminal improvements estimated to cost $1,800,000, form the major improvements projected.

The contract includes enlargement of the piers, necessary dredging at both piers and the construction of a lay-up berth at Port Borden, the latter rendered necessary with the new oil-burning ferry. Up to now traffic across Northumberland Strait has been handled by one ferry supplemented in the summer by one of the ships of the Canso ferry service. The distance between Cape Tormentine and Port Borden is about nine miles.

The present terminals were completed 13 years ago. Growth in the commerce of Canada's island province and the widening of its railway lines to standard gauge as well as vast increases in tourist traffic, has resulted in the present program to provide more adequate service. The Canadian National operates the ferry service as well as the railway lines on the island and the ferry provides the rail connection with the mainland.

A large army of engineers is thrusting a pair of steel ribbons through the northern wilderness, as it pushes northward and extends the line of the Temiskaming and Northern Ontario Railway toward historic James Bay. The appropriation for the project calls for an extension of 40 or 45 miles, or from the present end of steel at Coral Rapids, to Blacksmith Rapids, on the Abitibi River. The appropriation is at the rate of $50,000 a mile, a total of $2,000,000.

Later in 1930 or 1931, the line will be extended from Blacksmith Rapids to Moose Factory on James Bay, thus providing one 700-mile line linking Toronto with the prolific inland sea of the North. This is bound to become a potential traffic producer, due to the extensive natural resources in forest, mine, fur and fisheries of the region. George W. Lee, chairman of the T. & N. O.

THE INFLUENCE OF AN IDEA

The measure of a man's success is the influence he exerts upon other men. It is determined by the extent to which he moulds other men to his way of thinking and speaking.

And in a different, and perhaps in a lesser sense, that which is true of the individual is true also of a great mechanical idea.

A few years ago, the coupling of hose Automatically was generally looked upon as but an alluring theory, improbable of practical achievement. Today there is scarcely a railroad in the country whose officers do not regard it a very important development in train operation.

The performance of the ROBINSON AUTOMATIC CONNECTOR has been largely responsible for this change of view. It meets every requirement of this important service with great dependability.

ROBINSON CONNECTOR COMPANY

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"Building Automatic Connectors is our exclusive business"

commission, is in direct charge of the extension work.

To accommodate the three new coastal vessels to be put into service this summer, the Canadian National Steamships is expending approximately $750,000 on a model pier at the port of Vancouver, which is to be opened to service late in May. This expenditure includes the remodeling of the present pier, at the foot of Main street. The remodeled terminal will provide for the company's growing coastwise service to Alaskan ports and the daily service to be reestablished between the mainland, Victoria and Seattle.

The pier is 1,500 feet long, and 220 feet wide, comparing almost exactly with the Canadian Pacific pier D in length, although it is slightly wider. Approach is through an imposing archway carrying the words "Canadian National S.S." in illuminated letters 15 feet high.

The main waiting rooms and offices are housed in a structure 250 by 160 feet, and there are two large traffic sheds 980 feet by 94 feet, and 980 by 70 feet. Depressed double railway trackage enters the pier beneath the motor concourse, and continues on an incline to the center of the traffic sheds.

The three new ships which are to serve the triangular route—Vancouver, Victoria and Seattle, will be first class ships in every respect, according to a statement recently made by Sir Henry Thornton, president of the Canadian National System.

Each of the ships will accommodate 334 first class and 70 third class passengers, and, in addition, 1,500 deck passengers; the cargo space is 45,000 cubic feet, with an added 4,370 cubic feet of space insulated for refrigeration service. There is also space to carry 30 motor cars on the main deck, as well as usual space for baggage, express and mail. Each is a twin-screw, single-geared turbine engined ship.

To care for the increased transportation needed, incident to the steady increase of traffic through the Port of Halifax, a bridge to cost $3,000,000 is to be constructed. Work will be started as soon as possible. The Halifax harbor commission has approved the bridge company's application for a permit to construct the bridge.

It will require about two years to complete the structure, which will link Halifax and Dartmouth, on the north shore of the harbor. A structure, 3,775 feet long, with a main span 906 feet over the channel, with two side openings 347 feet each, the structure will be one of the largest along the Atlantic Coast. The central vertical clearance for ships will be 150 feet at high water, permitting transatlantic ships to pass freely under the structure. The bridge will cut off 20 miles travel between the two points.

The Chicago & North Western at Rockford, Ill. Photo by R. E. Collons, Chicago.

Dotting the world's map are many custom houses, but Toronto will have one of the first constructed exclusively to meet modern transportation needs. It is to serve the two transcontinental Canadian National and Canadian Pacific Railway systems, besides the growing traffic on the Great Lakes, between the United States and Canada, which enters Toronto.

The Dominion government has appropriated $2,100,000 for this model custom terminal. It is to be built at the southwest corner of Yonge and Front streets, adjacent to the rail lines, as well as handy to the steamship piers.

The pressure of a tremendous increase in population in the past decade is responsible for the serious consideration of an extensive subway system to handle traffic in Montreal. The report of J. F. Saint Cyr, president of the Montreal tramways commission, for the fiscal year, shows the largest year in traffic, both tramway and motor bus, in the history of the city. Mr. Saint Cyr declares the present congested transportation problem can not be solved until subways form at least a part of the transport system. The history of cities proves it.

"Traffic conditions are becoming more and more difficult to cope with," the president advises. "An adequate remedy will ultimately be found only in a more rapid mode of transportation." He added that the construction of subways is more than a mere project, a fact to be faced in the imminent future. "We are now studying the advisability of re-routing certain tramway lines, with the object of securing, under existing conditions, some measure of higher efficiency and temporary relief until the establishment of the subway system," explained Mr. Saint Cyr.

His report shows a large increase in passengers carried during the past year, as compared with the previous year. In 1929 the total of revenue passengers transported was 250,676,513 as against 237,506,621 in 1928. Of the passengers carried, 234,251,565 were carried on tramways and 16,424,948 by motor bus. The street cars of the Montreal Tramways traveled 33,792,021 miles, an increase of very close to 2,000,000 miles over the previous year.

Montreal's car fares remain stationary while elsewhere on the American continent the rates have increased. The average fare last year within the uniform territory was 6.17 cents; outside, 2.92 cents; a combined average of 6.0239 cents. "It has not varied since 1921," says Mr. Saint Cyr, "while in American cities of more than 25,000 population it has increased from 7.246 cents to 8.4258 cents. The latter fare is actually 40 per cent higher than the Montreal fare."

Rapid Completion *of the* Cascade Tunnel

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NOT only was boring of the Cascade Mountain Tunnel*—the longest in America—done at about twice the customary speed, but Celite added to the concrete made possible unusual time records in the placing of the lining. 90 feet of completed lining or about 425 cu. yds. of concrete, were placed per calendar day.

2% of Celite added to the concrete, a 1-2-4 mix, by increasing the "workability" of the concrete assured rapid, easy placing by the chutes and concrete gun. Its use was an important contribution to the completion of this tunnel in the remarkably short time of three years.

The permanence, water-tightness, the absence of honeycombing, and the fine finish that Celite insures, are additional advantages that help make the Cascade Tunnel an outstanding example of American engineering achievement.

*The Great Northern Tunnel through the Cascade Mountains is 7.77 miles long, 16 feet wide and 22 feet high. It is lined with concrete its entire length.

CELITE *assures "workability" not obtainable by other means*

CELITE increases the "workability" of concrete in mixes of *all* proportions, with every type of aggregate. Harsh concrete with addition of Celite, can be handled successfully without the excessive use of water. Lean and relatively dry mixes are placed with ease with the aid of Celite. Under-sanded mixes are made workable by adding a few pounds of this siliceous material.

Less labor is required in placing concrete made with Celite. Forms fill better. The "workability" it gives overcomes harshness and maintains uniform dispersion of the cement and aggregates and this insures a better bond to reinforcing. Less free water is present in the mix so that there is less surface water to interfere with finishing. *Mail coupon for full information.*

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Please send me full information about the use of Celite in Concrete.

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Test Car for Live Stock Built by the Canadian National Rys., After Designs Patented by S. C. Todd. Note the Movable Partitions.

Comfort for Live Stock

By ALLAN STRATHGLASS

RAILWAYS seem to be turning to the comfort of their live stock passengers if the action of the Canadian railways in testing out a new type of cattle car is any indication of the trend of railway affairs. But while the humane consideration is not the only factor involved in the use of these cars it must be admitted the primary object in their construction will be the saving of the heavy financial loss suffered by shippers and packers due to the present unsatisfactory method of shipping cattle. In Canada, the loss in damaged cattle alone amounts to more than two million dollars a year; the losses incident to wastage in time, labor and material in the building and taking down of temporary partitions in the present type of car have not been estimated, but must run into large figures.

Coincident with the savings to the people which the new car referred to is expected to effect, it is believed the railways will benefit by increased revenues which will not only take care of the capital outlay necessary for the changes to be made, but eventually will show profits.

The new cattle car is the invention of S. E. Todd, secretary of the Packers' Council of Toronto, Canada. Incidentally Mr. Todd has voluntarily offered his patent rights to the Canadian railways as a gift to the packing industry. For some years there has been a demand in Canada for more efficient and more humane methods of shipping cattle. In an attempt to solve this problem, the department of agriculture of the government of Canada called conferences of the railways and live stock interests in the spring of 1928. The first meeting was held in Montreal attended by government officials, railway men, representatives of the packing industry, farm press, humane societies, live stock exchanges, live stock shippers, live stock insurance companies and live stock associations.

Among other matters discussed at this and subsequent meetings were questions pertaining to the separation of classes of mixed shipments; provision for three classes, calves and sheep, cattle, hogs; practicability of permanent moveable partitions in stock cars; and means of increasing the effectiveness of partitions by increased care in railway handling.

The ordinary cattle car is not partitioned, and in shipping mixed loads of cattle, or even full loads, made up of the one class of animals, various accidents have been the rule, resulting in loss to farmer and packer. It was shown that approximately 75 per cent of all short haul loads are made up of mixed loads, comprising sheep and hogs in the one car or cattle and calves, or horned cattle and dehorned cattle. All these animals, it is well known, get into mysterious and sometimes deadly arguments among themselves; but aside from the economic loss the humane angle is to be considered. Usually, in the case of mixed loads, the farmer or shipper fixes up some kind of temporary partitions. These partitions in many cases are not strong enough to withstand the jarring and shunting and the pushing and shoving of the cattle. The Todd car seeming to be the logical remedy for these conditions the railways were requested to provide such a car to give as full a test as possible on all lines in Canada.

The new type Todd partitioned cattle car is actually the ordinary cattle car with the addition of two strongly made rotating partitions, which may be set transversely in any part of the car, thus making three compartments of variable sizes. As may be seen from the photograph, a boxed track is suspended along the length of the middle of the car ceiling. Two small cars run along this track, attached to each of which is a swivel holding a movable, iron-braced partition. Running the full length of the car are four slotted iron braces, two on each side, and the height of the partition apart. Four iron bolts, one on each corner of the partition fit into the slots in the braces, and when these bolts are locked into place, a rigid partition is formed, which apparently will withstand any pressure ordinary cattle are able to put against it. Estimates give the cost of remodeling the present type of cattle car at from $110 to $190 a car. The cost applied to the thousands of cattle cars in use on the Canadian railways would be enormous, but it is one angle of the problem which nevertheless will have to receive consideration.

It is believed that almost any shipper would be willing to pay a slight extra charge for the use of the Todd car, thus in time reimbursing the railways for their expenditures. The shipper would be more than protecting his own interests by so doing, for he would be practically guaranteeing the safe arrival, in good condition, of his live stock.

The tests made by the railways have so far been entirely satisfactory. The first cars were delivered to the department last February, one constructed by the Canadian National Railways and another by the Canadian Pacific. The first were made on the eastern lines of both railroads. In the case of the Canadian National car, out of 592 head of live stock there were only two cripples. Similar tests were made on western lines where out of 496 cattle only three were crippled. In a long-haul shipment of hogs from Winnipeg to Montreal there were no casualties, something out of the ordinary.

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1,000 57½-ton Capacity Hopper Cars for Norfolk & Western Railway

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TRAIN CARS SINCE 1905

The Experience of One Quarter of a Century

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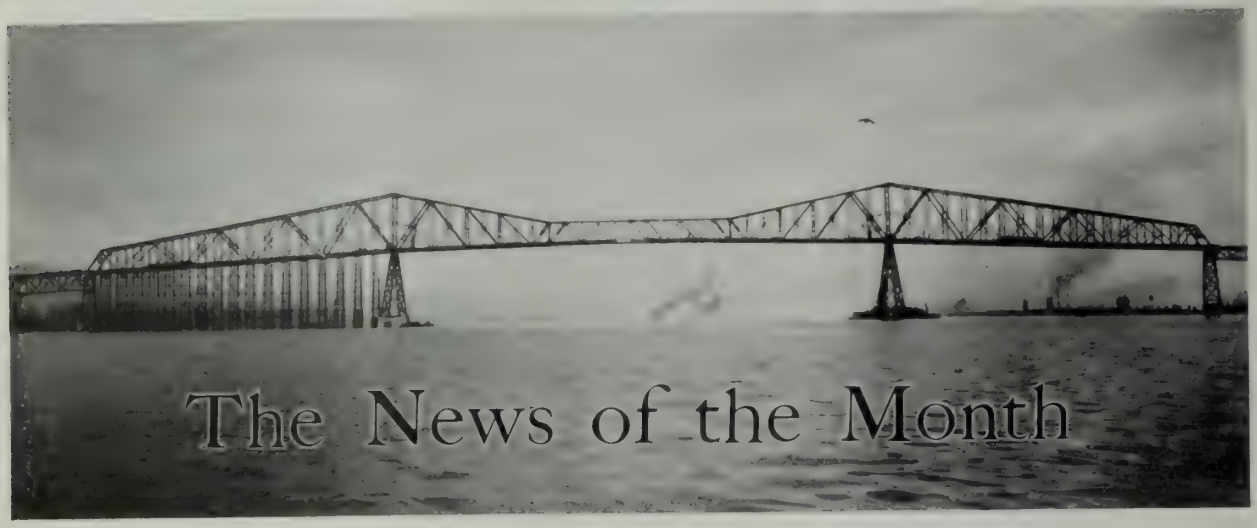
It Was the Fare, Not Fear

Women can not resist a bargain. Before a recent cut in prices the patronage of women on one of the transcontinental air lines amounted to only 16 per cent of the total. With the cut in prices, however, this ratio jumped to 20 per cent and is increasing from day to day.

A survey made by the women's department of Curtiss-Wright Corporation of all of the prominent air lines of the country shows that 23 per cent of air passengers in this country are women.

Sunday clears away the dust of a whole week.—*Addison.*



The Columbia River Bridge At Longview, Washn., Just Dedicated.

COMPLETE reports for 1929 just filed by the railroads with the Interstate Commerce Commission and made public March 31 show there was a reduction, compared with the preceding year, of 83 or 3.2 per cent in the number of persons who lost their lives in 1929 as a result of accidents at highway grade crossings. This reduction took place in the face of an increase of 13 per cent in the number of fatalities on highways due to motor car operation during 1929 compared with 1928. Fatalities resulting from highway grade crossing accidents totaled 2,485 in 1929 compared with 2,568 in 1928. Persons injured in such accidents in 1929 totaled 6,804 compared with 6,666 in the preceding year, or an increase of 138. A total of 5,975 accidents took place at highway grade crossings during the year compared with 5,800 the preceding year, or an increase of 175.

The railroads, in cooperation with state and local authorities, are eliminating as rapidly as possible the most hazardous crossings, but despite objections of the rail carriers, many new crossings are being installed. For instance, in 1928, according to the latest reports available, 270 highway grade crossings were eliminated, while 1,697 crossings were created. Because of physical reasons and prohibitive cost, it is impossible to eliminate all highway grade crossings, but millions of dollars are being spent yearly by the rail carriers for automatic warning devices, gates, signs and signals, in an effort to safeguard human life to the greatest extent possible at all highway grade crossings which can not otherwise be eliminated.

E. S. French to Head Boston & Maine

Edward S. French of Springfield, Vermont, was elected president of the Boston & Maine Railroad at a meeting of the board of directors April 9. Mr. French, who is now the operating head of several independent railroads in northern New England and president of a group of waterfront and warehouse rail terminals at Boston, assumed his new duties at once.

The new president is 46 years old. A native of Maine, he received his early education in the public schools of Somerville, Mass., was graduated from Dartmouth College in 1906, and has spent all his business life in New England. He is one of the 12 Vermont members of the New England Council.

Thomas Nelson Perkins, who has been acting president since the death of President George Hannauer last November, was elected chairman of the board. He will continue his active association with the Boston & Maine, it was stated.

They Go to Madrid

Delegates representing the United States in the International Railway Congress to be held at Madrid, May 5-15, have been appointed by the state department at Washington. Those selected are, James B. Strong, president of the Ramapo-Ajax Corpn., New York; Bird M. Robinson, president, American Short Line Railroad Association, Washington, D. C.; Fred A. Poor, president of the P. & M. Company, Chicago; Harold A. Smith, president, the Transportation Publishing Co., Los Angeles; Walter F. Schleiter, president, Verona Steel Works, Pittsburgh, Pa.; Edward A. Simmons, president, Simmons-Boardman Publishing Co., New York; George R. Carr, chairman, the Locomotive Firebox Co., and vice president of the Dearborn Chemical Co., Chicago; Charles H. Muchnic, New York. One or two more delegates are yet to be named by the state department. The last previous meeting of the congress was held in London in 1925.

What the Graham Plane Contained

The postoffice department at Washington has issued a statement showing that the Western Air Express plane which, with its pilot, Maurice Graham, was lost on Jan. 10, last, on the route from Los Angeles to Salt Lake City, contained $300,000 in currency and other negotiable securities, and that Graham might have been murdered by bandits and his plane destroyed, were proved to be unfounded Mar. 27. Assistant Postmaster General Glover, in charge of the air mail service, says officially that the plane carried 200 registered letters, which contained only $300 in currency and $1,700 in securities. Claimants have been advised to file their claims with the post office department.

On his way from Los Angeles to Salt Lake City, Graham took off from Las Vegas, Nev., in a blinding snowstorm at 10:10 p.m. on the night of Jan. 10, after stopping at that place for oil, gas and

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2. Flexibility, permitting expansion & contraction of rail.

These two features are the outstanding essentials of proper track joints. Ask your experienced trackmen, they *know*.

The National Lock Washer Company
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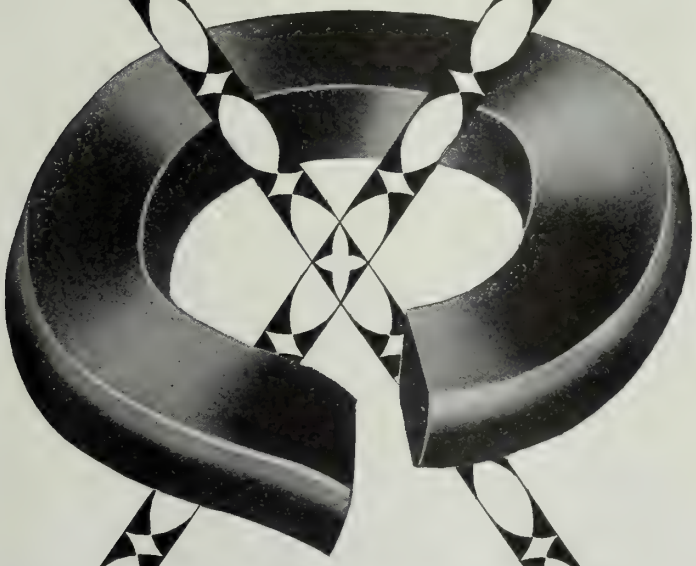

The High Bolt
Tension Spring Washer

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mail. No trace of either pilot or plane has been discovered since their disappearance despite the fact that a diligent search was conducted for many days.

Motor Bus Bill By House

The first act by congress to place interstate motor bus traffic under government regulation came March 24 with passage by the house of the Parker bill to give the Interstate Commerce Commission jurisdiction over the motor carriers.

The final vote was 215 to 118, after a motion to send the measure back to the interstate commerce committee for amendment was rejected by 236 to 104. The bill was reported favorably by the senate committee on interstate commerce April 9. Several minor amendments were attached to the bill, but it remains essentially the same as passed by the house.

In addition to regulatory powers over rates and schedules, the federal commission, with the aid of joint boards composed of representatives of states involved, would be required to pass on applications for certificates of necessity and public convenience, which the bus lines would be called upon to obtain. The bus operators also would be compelled to carry surety bonds for the protection of the traveling public.

Merge 14 Bus Lines

Fourteen motor bus companies have been authorized by the board of public utility commissioners of New Jersey to merge and consolidate into the Public Service Interstate Transportation Co., according to an order recently issued by the board.

The application was made, according to the order, by the Public Service Interstate Transportation Co., Schultz Management, Nelson & Johnson Transportation Co., Worth Motor Bus Corporation, Williamstown-Philadelphia Bus Co., Clementona Transit Co., P. & G. Transportation Co., Inc., Barrington-Philadelphia Bus Co., Philadelphia-Hammonton Bus Co., T. & S. Bus Co., Twin City Transportation Co., Union Bus Co., White Way Tours and Shore Service, Inc.

New Line Proposed in Oregon

The Oregon Electric Railway has applied to the Interstate Commerce Commission for authority to construct 40 miles of line in Lane County, Oregon, to tap a timber section. The Oregon Electric Railway runs from Portland southerly through Willamette Valley to Eugene, 125 miles. It is owned by the Spokane, Portland & Seattle Railway, which in turn is owned by the Great Northern and Northern Pacific railroads. The last-named carriers own 98 per cent of the stock of the Burlington.

"Consequently," said the application, "the output of the manufactured products of the timberlands reached by the proposed new railroad will be available to transportation by some 27,000 miles of railroad."

Fast Air Line Announced

Plans for a passenger air service to bring Chicago and New York within six hours of each other, and Dallas, Tex., and other Southwestern points, within eight hours of Chicago and 15 hours of New York were announced March 24 by National Air Transport.

The planes to be used in the new service will be capable of a cruising speed of 140 miles an hour. National Air Transport heretofore has carried mail only.

Car Loading Declines

Loading of revenue freight for the week ended on March 22 totaled 875,542 cars, the car service division of the American Railway Association reported April 2. This was a decrease of 5,645 cars under the preceding week and a reduction of 86,858 cars below the same week in 1929. It also was a reduction of 74,652 cars under the same week in 1928. Miscellaneous freight loading for the week of March 22 totaled 360,144 cars, 41,696 cars below the same week in 1929 and 9,718 cars below the week in 1928. Loading of merchandise less than carload amounted to 251,437 cars, a reduction of 11,978 cars under the same week last year and 9,127 cars under the same week two years ago.

Car Needs Are Reported

Shippers of the country, through estimates of the shippers' regional advisory boards, expect carload shipments of the 29 principal commodities in the second quarter of 1930, (April, May and June), to be about 8,211,451 cars, a reduction of 354,898 cars, or 4.2 per cent below the corresponding period in 1929, the car service division of the American Railway Association announced April 2. The shippers' regional advisory boards, covering the entire United States, supply these estimates quarterly to the car service division so that the railways may have a guide as to the service they are to be called upon to perform in a given quarterly period.

Aircraft Exports in January

Thirty-two foreign countries purchased aircraft, engines and parts valued at $573,255 from the United States during January, 1930, according to figures compiled by the department of commerce and released March 27. Exports of aircraft amounted to $274,189 for 17 airplanes, seaplanes and other aircraft. Twenty-five engines were imported by these countries at a total cost of $100,748, while parts were purchased at a cost of $198,318.

Net Lower for First Two Months

Class I railroads had a net railway operating income of $115,169,125 in the first two months of 1930, which was at the annual rate of return of 3.88 per cent on their property investment, according to reports just filed by the carriers with the Bureau of Railway Economics and made public April 8. In the first two months of 1929, their net railway operating income was $161,914,617, or 5.60 per cent on their property investment. This compilation as to earnings for the two months of 1930 is based on reports from 173 Class I railroads representing a total of 242,359 miles. Gross operating revenues for the first two months in 1930 totaled $879,133,774 compared with $963,661,186 for the same period last year, or a reduction of 8.8 per cent. Operating expenses for the first two months of the year amounted to $687,014,559 compared with $720,302,665 for the same period one year ago, or a reduction of 4.6 per cent.

Class I railroads paid $58,223,420 in taxes in the first two months of 1930 compared with $62,953,714 for the same period the year before. For the month of February alone, the tax bill of the Class I railroads amounted to $28,760,738, a decrease of $2,787,284 under the previous year. Thirty-one Class I railroads operated at a loss in the first two months of 1930, of which nine were in the eastern, four in the southern and eighteen in the western district.

United Engineers Get Big Contract

United Engineers & Constructors, Inc., has been engaged by the American Potash & Chemical Corpn. to design and construct large additions to its manufacturing facilities at Trona, San Bernardino County, California. The improvements will consist of a new power plant and large extensions to the potash and borax plants and additions to the village, involving an expenditure of $4,500,000.

Air Mail on Space Basis

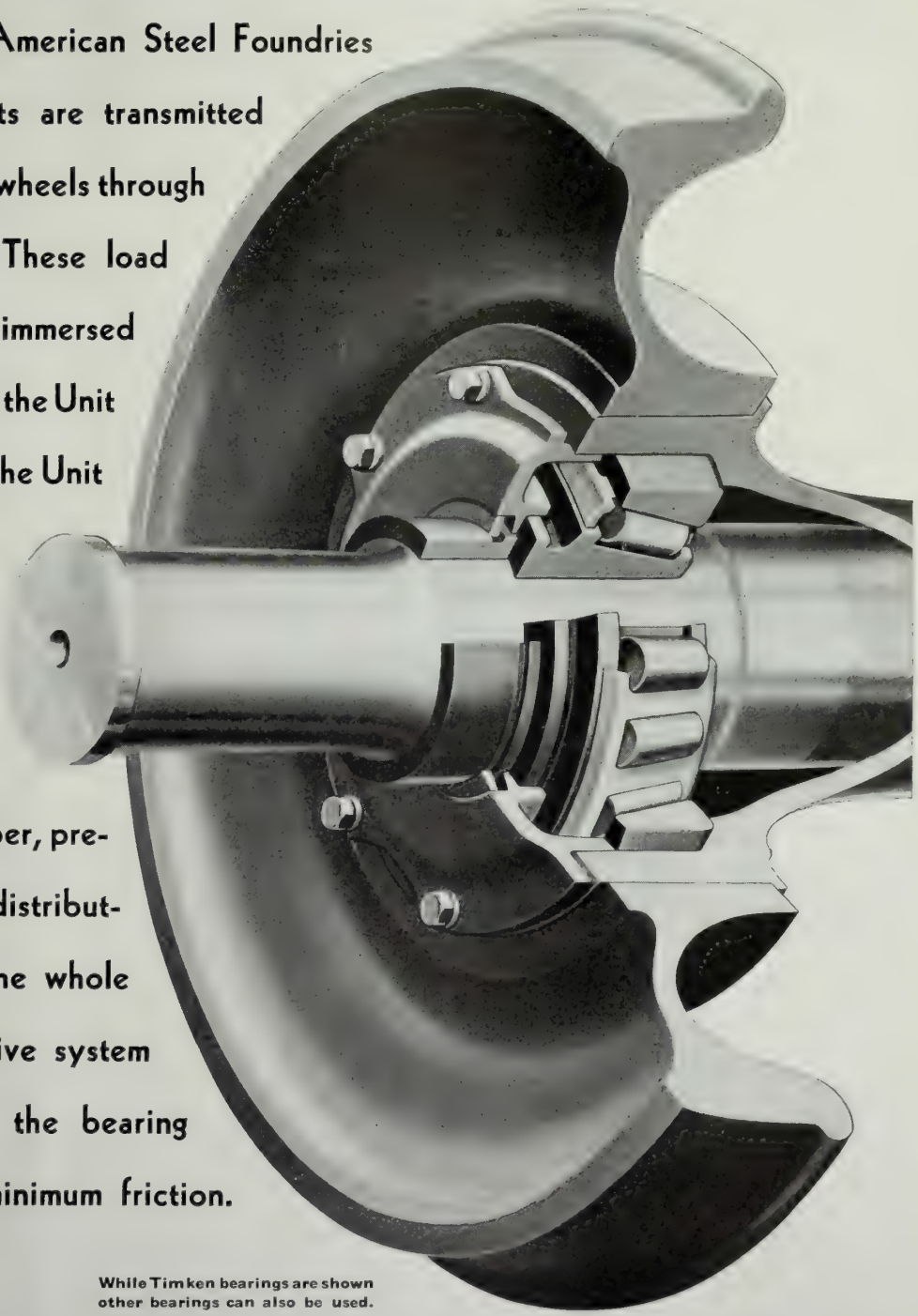
Colonel Paul Henderson, vice president National Air Transport, Transcontinental Air Transport, Inc., and Eastern Air Transport, formerly assistant postmaster general, authorizes the following:

"Postmaster General Walter Brown and the President of the United States have evolved a plan which it is believed will establish air mail in the United

EFFECTIVE LUBRICATION

American Steel Foundries Roller Bearing Unit

Loads carried by American Steel Foundries Roller Bearing Units are transmitted from the axle to the wheels through the lower rollers. These load carrying rollers are immersed in the lubricant when the Unit is not rotating. As the Unit starts to revolve the lubricant is thrown to the larger diameters of the sealed chamber, preventing its loss and distributing it throughout the whole bearing. This positive system lubrication reduces the bearing wear and insures minimum friction.



While Timken bearings are shown other bearings can also be used.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

States on a basis as permanent as the railway mail.

"Until now, the carriage of air mail has been paid for on the basis of weight of mail carried. This new plan provides for payment on a space basis, just as mail is carried on the railroad trains.

"This definite step forward in government cooperation with mail carriers is the most important and the most forward looking step made in aviation since the first air mail in 1918. The United States has led all civilized countries in air mail development. This plan will insure its continued leadership."

Labor Opposing Rail Mergers

Increased powers for the Interstate Commerce Commission to prevent mergers "highly profitable to the manipulators of railroad properties but of doubtful value to the public" were suggested March 29 by the Railway Labor Executives' Association.

The association, composed of heads of all standard railroad organizations, said in a statement it had been "making common cause with cities and towns along the lines of railroads that are facing practical ruin through changes of terminals, division points and shipping centers as a certain result of railroad consolidations."

"When terminals and other facilities have been moved and consolidated," the statement continued, "losses amounting to millions of dollars, losses of employment which have affected over 200,000 employes, and losses through part-time employment which have affected almost all railroad employes have been brought about and in many cases the gain has been questionable."

Urges More I.C.C. Power

A recommendation that regulatory powers over railroad holding companies be given the Interstate Commerce Commission was made April 10 by Commissioner Joseph B. Eastman, as he completed his third day's testimony in the house interstate commerce committee's railroad-ownership investigation.

The commissioner criticised the lack of authority by the commission to interfere with the financial operations of holding companies in the affairs of railroads, even though such operations, if carried on by the railroads themselves, would be illegal unless approved by the commission.

Eastman asserted it has been shown in the public utilities field that a holding company, by the issuance of non-voting stock, can control huge organizations with only a relatively small amount of invested capital.

Bus-Rail Service

The Pennsylvania Railroad in cooperation with the Greyhound Corporation, began operation, April 1, of combined bus-rail service between Philadelphia and Chicago and Philadelphia and St. Louis. Departure of a motor coach from Broad Street Station at 8 a.m. signalized the opening of this coordinated service, which is a distinct innovation in long distance passenger transportation in the United States. The principal feature of this new type of service is that long distance travelers have the privilege of motor coach travel during the daylight hours, with the comfort of Pullman cars for the night parts of the journey.

The total fare, including upper berth sleeping car accommodations on the night trip, is $29.98 from Philadelphia to St. Louis and $28.48 to Chicago. In comparison, the cost of an all-rail journey, using trains on which no extra fare is charged and upper berth, is, respectively, $42.92 and $36.06 between Philadelphia and St. Louis and Philadelphia and Chicago. The elapsed time for the bus-rail trip from Philadelphia to St. Louis is 34 hours, and 26 from Philadelphia to Chicago.

Rail-Bus Service on P. R. R.

The Pennsylvania Railroad has been authorized by the New Jersey board of public utility commissioners to substitute bus service for train service between East Millstone and New Brunswick, a branch line of the New York division of the railroad, according to an order issued by the board March 18.

"It is proposed to use a bus exclusively for passengers holding railroad tickets, the order states, and the bus operation under contract will result in a saving of $4,800 a year to the railroad.

The Public Service Coordinated Transport was authorized in another order to substitute 20 buses in place of street railway service on certain streets in Newark. Objection to the application was made by the Ironbound Transportation Co., which operates buses in the same section of the city, but the board held that the proposed substitution would not materially change the conditions which have heretofore existed.

The B. & M. Steps Up

The Boston & Maine Railroad handled 99,577,200 more ton miles of freight in 1929 than in 1928, representing an increase in freight revenue of $1,519,748, or 3.2 per cent, and reduced by more than one-half the rate of loss in passenger traffic, it was shown in the annual report to stockholders made public March 28. Improvement projects aggregating millions of dollars, and the improved net results attributable to the modernization program of the "new Boston & Maine" were described in the report.

Paying added testimonial to the late President George Hannauer, Acting President Thomas Nelson Perkins for the board of directors, said: "The new Boston & Maine is his memorial; a memorial of immeasurable value to this section of the country . . . He planned a complete rehabilitation of the Boston & Maine Railroad, much of which he had carried to a conclusion, the remainder of which will be carried out by the present management."

Union Pacific Buys Bus Fleet

The Union Pacific System has purchased 33 new motor stages to be placed in service within the next 60 days over the present transcontinental route between Los Angeles and Chicago and over its northwestern routes.

The majority of the new buses will be of the 34-passenger type and will cost $425,000, J. L. Haugh, vice president of the Union Pacific System, said. There will be 30 coaches of the 34-passenger type, two of the 26-passenger and one of the 21-passenger type.

Twenty-two of the new stages will operate between Los Angeles and Chicago, the remainder being placed in service on the routes between Portland, Spokane, Boise and Salt Lake City. In all, 300 motor stages of this modern type are now in service on all routes of the company's transcontinental system.

The Interstate Transit Lines, the Union Pacific Stages, Inc., and the Inter-State Coach Co., all subsidiaries of the Union Pacific System, operate the transcontinental motor coach network for the Union Pacific.

To Confer on Street and Highway Safety

Carelessness in driving, excessive speed for highway conditions, and improper turning, passing and parking, are, in the opinion of a large number of men and women over the country, the most unsafe and dangerous practices in the use of the highways, and more than any other factors intensifying the vehicle accident and traffic problem.

This concensus is gathered from letters that have been received following a radio address by Colonel A. B. Barber, director of the National Conference on Street and Highway Safety, which dealt with the magnitude and pressing aspect of the traffic and accident condition.

The letters mention and discuss the same questions and problems that are to come up for a thorough and detailed consideration in the third National Conference on Street and Highway Safety. This conference has been called by the

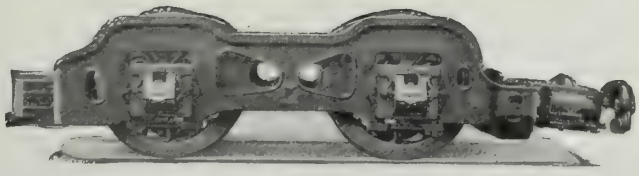
The Booster helps Conquer the "bad lands"

OUT in the "bad lands" grades are steep. Between Mandan, N. D. and Glendive, Montana a maximum grade of 1.1% made it necessary to split 4000 ton trains. To lower hauling cost and speed up freight the Northern Pacific placed in service an experimental locomotive, No. 5000 - a 2-8-8-4 type and one of the world's largest.

This enormous power plant replaced two Mikados. But even with its tremendous power it relies upon The Locomotive Booster for added power to start heavy loads and speed up movement over the ruling grades.

So well has this immense locomotive performed in every respect that eleven more, identical in design, are now on order.

Even on power of No. 5000 size the Booster has demonstrated its economic value. It is just one more indication that the Booster has become a fundamental part of locomotive design regardless of size or service because it capitalizes idle weight and spare steam.



The Locomotive Booster

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

secretary of commerce, Robert P. Lamont, as chairman, to convene in Washington on May 27 to 29, inclusive.

New Car Loading Plate

In conjunction with officials of several prominent roads, the Alan Wood Steel Co. of Conshohocken, Pa., has developed an improved car loading plate. This product is made of "A. W." Diamondette pattern floor plate rolled from open hearth steel. Plates of either 5/16" or 3/8" thickness are employed. The new plate has a raised, patterned surface that eliminates all objections to the use of a patterned plate in this service. The pattern is composed of raised, oval-shaped diamonds of size and spacing to accommodate the smallest of truck wheels without jolting or shifting the load. The raised diamonds give the truck operator a firm foothold, the absence of which in plain plates has been an ever-present hazard. However, the diamond pattern does not accelerate or decelerate the load during its passage over the loading plate. "A. W." plates are flanged on one end and beveled on the other end. This construction automatically gives the plate a grip on both car floor and platform as soon as the load is on the plate. This not only prevents creeping of the plate, but also effects a considerable time-saving due to the fact that no spiking or anchoring is necessary, and no delays are entailed as in the past for the removal of spikes when cars are ready for closing and sealing. "A. W." plates have been adopted by several prominent roads.

A Correction

In the report of the exhibition of the National Railway Appliances Assn. in the Chicago Coliseum, on page 13 of the March issue, the last paragraph quoted E. D. Cowlin, general sales manager for the Reliance Mfg. Co., as saying the A.R.E.A. had recommended Hy-Crome spring washers and that the Pennsylvania Railroad specifications recently called for Hy-Crome.

Mr. Cowlin says the entire paragraph was an error. "It should have read that the recent Penn specifications called for a spring washer similar to Hy-Crome. In other words, the Penn specifications did not mention any name whatever. Your article would indicate that they specified our Hy-Crome product.

"Also, in the same article you quote me as saying that the A.R.E.A. had recommended spring washers of this type. As a matter of fact, the A.R.E.A. has not recommended anything; what it did at the last meeting was to withdraw from the manual the specifications covering a competitive type of washer."

We regret very much any embarrassment caused Mr. Cowlin by this report.

Railway Construction

Tracks & Yards

CALIFORNIA.—The Western Pacific has asked permission to build an extension of 4.7 miles at Stockton to reach a new deepwater terminal now being constructed.

CONNECTICUT. — The New Haven has authorized the installation of automatic signals from Air Line Junction to Waterford, to cost about $357,000.

ILLINOIS. — The Chicago & North Western has let a contract to Milburn Bros., Mount Prospect, Ill., for highway rebuilding and street grade crossings between Des Plaines and Barrington, 15 miles.

MICHIGAN. — The Chicago & North Western has let a contract to the Bonifas Lumber Co., a subsidiary of the Kimberly-Clark Corpn., Neenah, Wis., for the Gogebic branch line extension, 5.6 miles, to cost about $164,215.

MISSOURI.—The Rock Island has let a contract to John Marsh, Inc., Chicago, for the construction of Section 5 of the joint line with the Milwaukee into Kansas City, between Polo and Birmingham, 12 miles.

Buildings & Structures

ARKANSAS.—Camden. The St. Louis-Southwestern has let a contract to the Kansas City Bridge Co. to replace the draw span over the Ouachita River, to cost about $100,000.

BRITISH COLUMBIA.—New Westminster. The Canadian National has let a contract to the Campbell Construction Co., Ltd., Calgary, Alta., for a branch line 29 miles long at Blue Island. A bridge will be built over the northern part of the Fraser River. The entire cost of the project will be about $2,000,000.

ILLINOIS.—Ingalton. The Elgin, Joliet & Eastern will build a 300-ton coaling station here.

Chicago. The Chicago & North Western has let a contract to the Harmon Engineering Co., Chicago, for alterations in the power house at California avenue, to cost about $30,000.

IOWA.—East Des Moines. The Rock Island plans to spend $250,000 at the new terminal here in 1930. Four yard tracks, each 4,000 ft., will be built, and four other tracks extended to 4,000 ft.; ten stalls will be added to the enginehouse; a wash and locker room building and a storehouse and platform will be built; a unit will be added to the cinder handling plant; an addition will be built to the power plant and a sanitary sewer system installed. The plans also provide for a 59-stall enginehouse, a machine shop, a power shop, a lumber shed, a car repair shop, and additional yard tracks.

KENTUCKY. — Louisville. The Kentucky & Indiana Terminal and the City of Louisville have reached a tentative agreement for the elevation of the railroad's tracks on Thirty-first street between Michigan drive and a point south of Broadway by the construction of an earth fill. The total cost of the project is estimated at $700,000, of which 35 per cent will be paid by the railroad and 65 per cent by the city.

MICHIGAN. — Wyoming. The Pere Marqette will construct a water treating plant here.

MINNESOTA.—St. Cloud. The Great Northern will build a 500-ton coaling station here.

MISSOURI.—St. Louis. The Missouri Pacific has let a contract to the Alskog Co., Chicago, for a 2,076,000 bu. addition to its grain elevator here. This brings the total investment in the elevator to $2,700,000 and will increase its capacity to about 4,076,000 bu.

NORTH DAKOTA. — Minot. The Great Northern has let a contract to the Railway Engineering Equipment Co., Chicago, for a direct steaming system to use lignite as fuel in its enginehouse here.

OHIO.—Mina. The New York Central will build a coaling station here.

PENNSYLVANIA. — Susquehanna. The Erie R.R. Co. has let a contract to the Roberts & Schaefer Co., Chicago, for one of the largest reinforced concrete locomotive coaling, sanding and cinder handling facilities ever built in this country. The storage capacity is to be 2,000 tons, coaling locomotives on four tracks; there are two large capacity multiple track "N. & W." type cinder plants in addition to a very large sand plant storage and drying plant.

Lanesboro. The Erie has let a contract to the James McCormick Co., Easton, Pa., for a bridge at this point.

New Freight Station

at Philadelphia for

THE PENNSYLVANIA

THE new Freight Station which we have designed and built for the Pennsylvania Railroad at 32nd and Chestnut Streets, Philadelphia, is a part of the railroad's extensive Philadelphia improvements now being made.

The structure is of reinforced concrete, contains 9,150,000 cubic feet, has a sixty-foot triple-deck driveway extending the whole length of one side, and its platforms have a tail-board capacity for 120 large trucks.

Construction began on March 15th and the structure was entirely completed and in use on November 15th—a construction period of eight months.

The work was done under the direction of the Pennsylvania Railroad organization: Mr. Robert Farnham, Chief Engineer Philadelphia Improvements; Mr. T. P. Watson, Principal Assistant Engineer Philadelphia Improvements.

UNITED ENGINEERS & CONSTRUCTORS, INC

Specializing in the Design and Construction of

SHOPS
LOCOMOTIVE TERMINALS
PASSENGER TERMINALS
POWER PLANTS
ELECTRIFICATION
PRODUCE TERMINALS
FREIGHT STATIONS
OFFICE BUILDINGS

UNITED ENGINEERS & CONSTRUCTORS
INCORPORATED
DWIGHT P. ROBINSON, PRESIDENT

PHILADELPHIA NEW YORK NEWARK CHICAGO
LOS ANGELES MONTREAL BUENOS AIRES RIO DE JANEIRO

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

CONLEY

Solid Manganese
Self Guarded

SPRING FROGS

SHOWING SPRING FROG IN SERVICE

Are giving excellent service under severe traffic conditions on Railroads using them.

Twenty years successful service by CONLEY TYPE FROGS have demonstrated their merit for safe and economical service.

CONLEY FROG & SWITCH CO.

Memphis, Tenn.

TEXAS.—Fort Worth. The Texas & Pacific is receiving bids for a passenger station, office building, freight house, auxiliary buildings and freight terminals, to cost about $4,000,000. An additional $4,000,000 will be spent in changing grades through Fort Worth. Work on the latter improvement has begun.

Morse. The Rock Island is receiving bids for two water stations, one at Dumas Road, and the other at Morse, on the new line from Dalhart to Morse.

Bus Orders

Substantial increases in the inter-city bus transportation for 1930 are expected by bus statisticians, who have used the records of the past five years as a basis for prediction of a 20 per cent increase in motor bus transportation activities in 1930. The same comparative increase has held good in the past preceding years, while the steady increase over the five year period seems a fair and conservative indicator for business in 1930.

Topping the current bus orders is the $500,000 addition to the Union Pacific fleet, for its transcontinental and west coast routes. This order consists of 12 coaches to American Car & Foundry Co., 11 to be built by General Motors Truck Co., and 10 to be built by White.

Other bus orders and deliveries for the month include: Boston Elevated Railway, five Twin coaches; H. Bussing, Braunweig, Germany, one urban Twin coach; Tomas & Cia, five Mack chassis; Iowa Southern Utilities Co., 10 Mack AB25 buses; Tacoma Bus Co., one Mack AB29; Cincinnati St. Ry. Co., ten Mack BC29, city type; Canton Motor Coach Co., one BC29 Mack; Wichita Falls Traction Co., one Mack BC29; Rollo Transit Co., two Mack BC29; Allentown & Reading Transit Co., one Mack BC29; Schuylerville Motor Coach Line, one Mack BC29; Peninsula Transit Corpn., seven Mack BK28; W. Atkinson, one Mack BK33; Pennsylvania R. R., three Mack BK33; Smith Motor Coach Co., one Mack BK265 chassis; Milwaukee Electric Ry. & Lt. Co., two Twin urban buses; Chicago Surface Lines, 29 trackless trolley buses from Twin coach, six from American Car & Foundry, and six from St. Louis Car Co.

Passenger Car Orders

The Chesapeake & Ohio lines order for 91 units of passenger equipment, costing $2,900,000, is the outstanding purchase of the month. It consists of 41 salon coaches, six mail and express, and 20 combination cars for use on the C & O; four salon coaches for the Hocking Valley, and eight salon coaches and 12 baggage and express cars for the Pere Marquette. Pullman will build 38 of the de luxe coaches and Standard Steel 15. The American Car & Foundry will construct the six mail and express and the 12 baggage and passenger cars; Pressed Steel the 15 baggage and passenger cars, and St. Louis Car the five passenger, baggage and mail cars.

Other orders placed since our March issue include five baggage cars for the Rock Island ordered from American Car & Foundry; five diners ordered by the Southern Pacific from Pullman; 45 multiple-unit cars for the Pennsylvania divided between Pressed Steel and American Car & Foundry, 25 going to the former, and 20 to the latter; two 73-ft. gas-electric rail motor cars ordered from the J. G. Brill Co. by the Union Pacific, and two trailers for the same carrier to be built by Pullman; two oil-electric and four oil-electric car frames and trucks ordered by the Canadian National from the National Steel Car. The bodies for these frames are to be built in the railroads' shops; 10 double-end double-truck cars mounted on Brill 177-E-1-X trucks ordered by the Lehigh Valley Transit Co. of Allentown, Pa., from the J. G. Brill Co.; Reading, 61 multiple unit passenger cars, seven passenger and baggage cars, and two passenger, baggage and mail cars from the Bethlehem Steel Co.; this company also has placed contracts for electric traction equipment costing about $2,000,000 with the General Electric and Westinghouse Electric & Mfg., and the American Brown Boveri Electric Corpn.

The Frisco is in the market for three diners. Reports show the Illinois Central will buy 15 coaches, 15 mail and baggage cars, four diners, two rail motor cars, 10 electric suburban coaches and 10 trailers.

Locomotive Orders

Despite a quiet market in respect to new locomotive purchases for the first quarter in 1930, the outlook generally is an extremely optimistic one, with several authorities predicting purchases later in the year, which will swell the volume of 1930 business enough to make a very favorable comparison with 1929.

Baldwin shipments show a steady expansion, and output for March undoubtedly will exceed that for both January and February. The company is increasing its working force gradually from 5,000 to 7,000 men, which status it hopes to attain by June this year. Samuel Vauclain is quoted as saying that "Baldwin Locomotive Works has more or-

ders at the present time than at any time last year, with more unfinished business on its books, and shipments showing a considerable increase over those of the same month a year ago." The company is enjoying the largest volume of business since its plant has been concentrated at Eddystone. Its shipments for the first quarter of 1930 trebled the output for the first quarter of 1929, the value of this year's shipments totaling $2,066,000. Present indications are for a larger output in April, with May operations exceeding all previous months, and peak production being reached sometime during the coming summer. Baldwin orders for March totaled 36 locomotives, with a total value of $2,500,000. This represents a booking value in excess of shipments for the same period.

The Chicago, St. Paul, Minneapolis & Omaha is in the market for three 4-6-2 locomotives, the Chicago Short Line Ry. for one six-wheel switcher, and the Spokane, Portland & Seattle for two 2-8-0 type, six tenders, and the rebuilding of two of its 4-6-2 engines. It is reported that the Peoria & Pekin Union will buy two eight-wheel switchers and that the Illinois Central will ask for bids on nine oil-electric engines.

Baldwin has received recently the following orders: Elgin, Joliet & Eastern, eight 2-8-2 type; Central R. R. of New Jersey, five 4-6-2 type Pacific and five switchers; Louisville & Nashville, six mountain type; Akron & Barberton Belt, four eight-wheel switchers; Maine Central, two 4-6-4 type; Durham & Southern, two 2-10-0 type; Lamm Lumber Co., one 2-8-2 type; Erie R. R., 10 switching locomotives. American Locomotive received an order for one six-wheel switcher from the Alabama State Docks Commission, and the Montreal Locomotive Works an order for ten additional tenders from the Canadian Pacific.

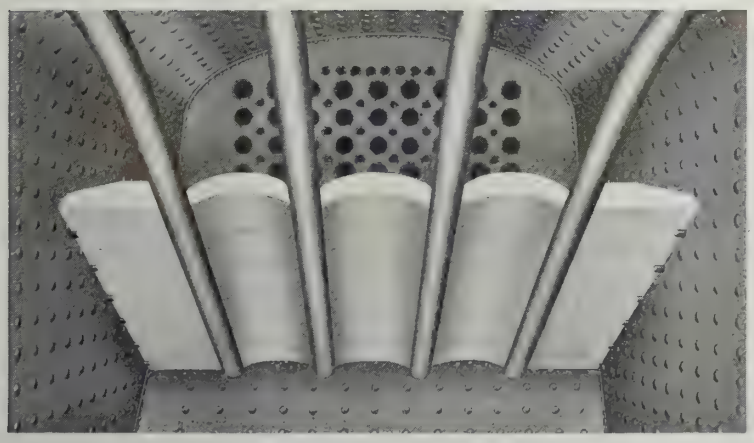
According to the latest bulletin of the American Railway Association, reports filed with its car service division by the carriers show that Class 1 roads had 8,657 locomotives in need of repair March 15, or 15.4 per cent of the number on line. This was an increase of 315 compared with the number in need of repair March 1, when there were 8,342 or 14.8 per cent. Locomotives in need of classified repairs March 15 totaled 4,838 or 8.6 per cent, an increase of 329 compared with March 1, while 3,819 or 6.8 per cent were in need of running repairs, a decrease of 14 under the number in need of such repair March 1. Class 1 roads had 6,910 serviceable locomotives in storage March 15 compared with 6,525 on March 1.

Freight Car Orders

Reports filed with the car service division of the A.R.A. indicate that Class 1 roads had 478,592 surplus freight cars in good repair and immediately available for service, on March 23. This was an increase of 11,410 cars compared with March 15 at which time there were 467,182. Surplus coal cars on March 23 totaled 218,226, an increase of 9,510 cars within about a week, while surplus box cars totaled 204,674, an increase of 1,157 for the same period. Reports showed further a surplus of 28,527 stock cars, an increase of 634 above the number reported March 15, while surplus refrigerator cars totaled 14,344, an increase of 675 for the same period.

Since the March issue the following inquiries have been made for freight cars: L.C.L. Corpn., 100 drop-side container cars of 50 tons capacity; Katy, 200 gondolas; C & O, four 30-yd. air-dump cars; Standard Oil of New Jersey, four tank cars; Virginian, repairs for 500 steel hoppers, and the Dallas Power & Light Co., one transformer car. The Pacific Fruit Express is in the market for 500 steel underframes for the

SOME FIGURE THAT BRICK IS BRICK but Economy Baffle Walls



are different—they are the newest thing in arches. It's not the brick alone that lowers your operating costs, it's the method used in applying them that counts. Economy baffle walls will improve combustion, increase the life of the brick and reduce maintenance costs.

Economy Arch Company

Railway Exchange Bldg. **St. Louis, Mo.**

refrigerator cars which it is to build in its own shops. Permission has been granted the Minneapolis & St. Louis by the federal court to purchase 500 box cars. The Illinois Central will buy 1,000 automobile-furniture cars, 500 hoppers, 500 drop-end mill type gondolas, 200 flats, and 65 cabooses.

Recent orders include: Seaboard Air Line, 2000 50-ton box cars divided equally between Pullman and Standard Steel Car; Louisiana & Arkansas, 500 box to General American; National Tube Co., 25 hoppers to Koppel Industrial Car & Equipment Co.; Gulf, Mobile & Northern, 250 box from American Car & Foundry; Freedom Oil Co., two tanks from General-American; Soo Line, 200 hoppers from Pullman, and 200 box from Siems-Stemble; General Electric, five steel underframe flat car bodies; Anglo-Mexican Petroleum Co., Ltd., three tank cars from General American; U. S. Navy Dept., four tank cars for transporting helium, from General American; the Milwaukee, two 20-yd, air-dump cars from Western Wheeled Scraper; Pennsylvania Salt Mfg. Co., one tank from General American; North American Car Corpn., 50 additional tanks from Pressed Steel Car. The Bangor & Aroostook has ordered 200 underframes and super-structures for box cars from the Standard Steel Car, and will complete the construction in its own shops. The Norfolk & Western has awarded the contract, referred to in our March issue, for rebuilding 1000 hoppers to the Virginia Bridge & Iron. Reports show the Union Tank Car Co. will build from 250 to 500 tank cars at Philadelphia and a like number at Whiting, Ill., and that the American Refrigerator Transit Co. has added from 19 to 27 cars to its order for 1000 refrigerator cars reported previously as having been awarded to the Mt. Vernon Car & Mfg. Co.

Changes in Personnel

Executive & Operating

The following promotions and appointments on the Southern Railway became effective April 1: **J. C. Austin,** general superintendent at Chattanooga, has been appointed assistant to vice president with headquarters at Washington, succeeding **J. H. Stanfield,** deceased. **L. F. DeRamus,** general superintendent at Danville, Va., succeeds Mr. Austin. **H. A. DeButts,** assistant superintendent at Greensboro, N. C., succeeds Mr. DeRamus. **R. C. Reid,** assistant general superintendent at Birmingham, has been appointed superintendent of the Cincinnati, New Orleans & Texas Pacific, with headquarters at Somerset, Ky., succeeding **L. H. Woodall,** transferred to the Danville division with headquarters at Greensboro, N. C. **J. G. Clements,** superintendent of the Alabama Great Southern with headquarters at Atlanta, succeeds Mr. Reid. **G. W. Adams,** superintendent at Selma, Ala., succeeds Mr. Clements. **W. H. Wilmer** has been appointed superintendent of the Mobile division succeeding Mr. Adams.

Xavier Sanchez Mejorada, secretary of communications in the Portes Gil cabinet, has been appointed president of the Mexican National Railways, with headquarters at Mexico City, succeeding **Bertram Holoway,** resigned.

KEEPING UP THE FENCES

Southern Pacific is a neighbor of 14 million persons in eight states through which it operates its 16,500 miles of lines. It is a neighbor just as surely as villagers are neighbors and it cheerfully recognizes the obligations of a neighbor.

The obligations are more than that of friendly greeting or of keeping up the fences. A neighbor assists in time of trouble. He co-operates for the good of all. He develops his own assets so that they increase the value of the community.

The assets of the Southern Pacific are developed to produce economical transportation. The value of every product grown in the eight states served by the railroad is increased by efficient transportation. The limits of their markets are extended. Last year one state shipped 42 per cent of its perishable produce more than 3,000 miles.

As a neighbor Southern Pacific keeps up its fences and keeps down cost of transportation.

SOUTHERN PACIFIC

J. G. Torian, assistant to the vice president and general manager of the Southern Pacific Lines in Texas and Louisiana, has been appointed assistant general manager of those lines, with headquarters at Houston. The position of assistant to the vice president and general manager has been abolished.

J. S. McGowan, manager of colonization and agriculture, western division of the Canadian National, with headquarters at Winnipeg, has been appointed assistant director of that work with headquarters at Montreal. **Robert England,** continental superintendent of colonization, succeeds Mr. McGowan. **E. H. Gurton,** eastern manager of colonization at Montreal, has been appointed superintendent of colonization and land settlement at St. Paul, succeeding **L. B. Boyd,** resigned. **N. B. Walton,** general superintendent of the Manitoba district, has been appointed general superintendent of transportation for the western region, with headquarters at Winnipeg, succeeding **V. I. Smart,** resigned to become deputy minister of railways and canals. **W. R. Devenish,** general superintendent of the Alberta district at Edmonton, succeeds Mr. Walton. **W. I. Munro,** superintendent of the Portage division at Winnipeg, has been appointed general superintendent of the Alberta district.

The Denver & Rio Grande Western has appointed **G. F. Dodge,** tax commissioner and special representative with headquarters at Denver. **S. P. Hollingsworth** has been appointed publicity and advertising agent, with headquarters at Denver.

The Union Pacific announces the appointment of **S. A. Brentnall,** fire, scale and sanitary inspector, as general safety agent with headquarters at Portland, Ore., succeeding **J. F. Grodzki,** assigned to other duties.

The Duluth, South Shore & Atlantic has appointed **B. A. Heath,** agricultural development agent with headquarters at Marquette, Mich.

J. A. Rittenhouse, superintendent of the New York zone of the Pullman Company, has been appointed assistant general manager of the San Francisco zone, with headquarters at San Francisco. **P. T. Ryan,** assistant general manager at Chicago, has been transferred to the New York zone. **B. H. Vroman,** superintendent of the central zone at Chicago, has been appointed assistant to the general manager of service personnel, with the same headquarters. **F. B. Kemp,** assistant superintendent of the Atlanta zone, has been appointed superintendent, with headquarters as before at Atlanta, succeeding **W. M. Camp,** retired.

J. B. Fisher, general superintendent of transportation of the central region of the Pennsylvania, with headquarters at Pittsburgh, has been appointed assistant to the general manager of that region.

B. L. Sperry, trainmaster on the Spokane, Portland & Seattle at Spokane, has been appointed superintendent of car service and telegraph with headquarters at Portland, succeeding **E. E. Lillie,** deceased. **J. A. O'Hearn** succeeds Mr. Sperry at Spokane.

L. A. Gregory has been appointed acting superintendent of the De Quincy division of the Gulf Coast Lines, with headquarters at De Quincy, La.

W. J. Galbroner, assistant superintendent of the Ohio division of the New York Central Lines, with headquarters at Columbus, has been appointed superintendent of that division with the same headquarters.

E. E. Stoup, terminal superintendent of the Chicago Great Western at Oelwein, Iowa, has been appointed assistant superintendent of the Minnesota division with headquarters at Clarion, Iowa.

Financial & Legal

The following promotions and appointments on the Pennsylvania became effective April 1: **J. B. Moffitt, Jr.,** audi-

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CLEVELAND
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Affording every convenience of the modern hotel or club, without the excessive cost, they mark a new era in the matter of select living for people of discrimination.

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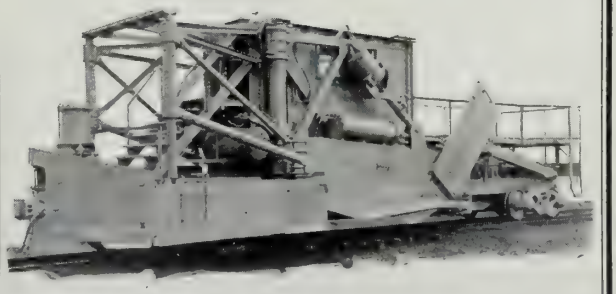

Meets Every Railway Spreading and Ditching Requirement

O. F. JORDAN CO.

East Chicago, Indiana

Walter J. Riley, President

tor of freight traffic, has been appointed assistant controller; **J. T. Davis,** assistant auditor of freight traffic, succeeds Mr. Moffitt; **F. G. DuBree,** assistant to the controller, has been appointed assistant auditor of freight traffic; **John Paul,** supervisor of methods, accounting department, succeeds Mr. DuBree.

The headquarters of **J. L. Scott,** general claim agent of the Illinois Central, has been moved from Chicago to Memphis.

Purchases & Stores

W. A. Summerhays, lumber and tie agent of the Illinois Central at Chicago, has been appointed manager forest products inspection and research bureau, with headquarters at Memphis. The position of lumber and tie agent has been abolished, the purchase of these materials now being supervised by **J. J. Bennett,** purchasing agent. The headquarters of **C. S. Burt,** superintendent of ties and treatment, has been transferred from Memphis to Grenada, Miss.

P. E. Welch has been appointed district storekeeper of the Southern Pacific Lines in Texas and Louisiana, with headquarters at Algiers, La., succeeding **N. Feigel,** transferred to Houston. Mr. Feigel succeeds **W. E. Rawson,** appointed assistant general storekeeper at Houston. **A. J. Stocker** has been appointed division storekeeper, Tucson division, with headquarters at Tucson, succeeding **H. P. Buchenery,** promoted.

Traffic

G. E. Smith, secretary to the vice president of the Indiana Harbor Belt and the Chicago River & Indiana, has been appointed industrial agent of these roads and the Chicago Junction, with headquarters at Chicago. **W. H. Ward,** general freight agent of the Indiana Harbor Belt, has also been appointed general freight agent of the Chicago Junction and the Chicago River & Indiana with headquarters at Chicago. **J. L. Carleton,** general agent of the freight departments of the New York Central, has been appointed assistant general freight agent of the Indiana Harbor Belt, the Chicago Junction, and the Chicago River & Indiana.

The Central of Georgia announces that **Noel B. Wright,** freight traffic manager, has been appointed traffic manager, a newly created position. Other appointments are: **W. McN. Knapp,** freight traffic manager; **F. D. McConnell,** assistant freight traffic manager; **C. D. Chancellor,** general freight agent; all will have headquarters at Savannah.

The Missouri & North Arkansas has appointed **J. A. Kell** freight traffic manager with headquarters at St. Louis.

C. C. Woodworth, district freight agent of the Southern Railway with headquarters at Cincinnati, has been appointed assistant freight traffic manager with the same headquarters. **A. T. Stovall, Jr.,** has been appointed general agent, freight and passenger departments, with headquarters at Havana, Cuba.

G. W. Mertens, general freight and passenger agent and superintendent of the Pacific Coast Railroad, has been appointed assistant vice president, with the headquarters as before at Seattle.

I. S. Auch, general freight traffic agent of the Lehigh Valley, at Buffalo, has been appointed general freight agent with headquarters at New York. Other appointments are: **J. F. James, Jr.,** general eastern freight agent; **W. H. Lancton,** city freight agent, both with headquarters in New York; **J. F. Sullivan,** assistant general freight agent of the Lehigh Valley Terminal at Buffalo; **F. X. Keilt,** division freight agent with headquarters at Newark.

R. M. Scott has been appointed general agent of the Louisiana & Arkansas, in charge of traffic and transportation with headquarters at Baton Rouge. **W. H. Andrews** has been appointed Pacific Coast agent with headquarters at Los Angeles. R. L. McKee, commercial agent at Oklahoma City, has been appointed general agent at St. Louis. **I. W. Dudley** has been appointed general agent at Seattle.

A. C. White, freight traffic representative of the Central Vermont at Boston, has been appointed general agent of the freight department with headquarters at Detroit.

H. A. Fischer has been appointed general agent, freight department, of the Duluth, South Shore & Atlantic, with headquarters at Detroit.

H. F. Halstead, commercial agent for the Kansas City Southern at Milwaukee, has been appointed general agent at Detroit, succeeding **E. J. Gleaser,** transferred to Kansas City, Mo., succeeding **C. P. Wilson,** resigned.

E. H. Dallas, district passenger agent of the Santa Fe at St. Louis, has been appointed general agent with the same headquarters, succeeding **John C. Sartelle,** deceased.

The Missouri Pacific has appointed **E. G. Waring,** general agent of the freight and passenger departments at Oklahoma City.

Mechanical

The Burlington announces that **H. C. Gugler,** master mechanic at Hannibal, Mo., has been appointed superintendent of shops at West Burlington, Iowa, succeeding **C. A. Henry,** assigned to other duties. **C. E. Melker,** master mechanic at Casper, Wyo., succeeds Mr. Gugler. **D. Nott** has been appointed assistant master mechanic of the Hannibal division, with headquarters at Brookfield, Mo., succeeding **H. E. Felter,** appointed master mechanic of the Casper division with headquarters at Casper.

J. H. Nash, superintendent of motive power of the Illinois Central with headquarters at Chicago, has resigned. The position has been abolished. **Louis A. North,** superintendent of the Burnside shops at Chicago, has retired after 28 years' service.

J. W. Keppel, master mechanic on the Canadian Pacific with headquarters at Edmonton, Alta., has been transferred to the Brandon, Man., division, succeeding **D. Cossar,** transferred.

W. D. Hartley, division master mechanic of the Santa Fe with headquarters at Raton, has been appointed mechanical superintendent, northern district, western lines, with headquarters at La Junta, succeeding **J. R. Sexton,** retired.

The jurisdiction of **A. R. Sykes,** master mechanic of the Missouri Pacific, on the Southern Kansas division, with headquarters at Coffeyville, has been extended to include the central division.

Civil

E. W. Backes, assistant division engineer of the Boston & Maine with headquarters at Brattleboro, Vt., has been appointed division engineer of the Connecticut River division with headquarters at Springfield, Mass., succeeding **H. C. Archibald,** transferred to the Portland division with headquarters at Dover, N. H. Mr. Archibald succeeds **John F. Collins,** who succeeds **S. P. Coffin,** resigned, as division engineer of the Fitchburg division with headquarters at Greenfield, Mass. **L. E. Norton,** assistant signal supervisor, has been appointed signal supervisor with headquarters at Springfield, Mass., succeeding **E. F. Gates,** deceased.

D. Davis, Jr., supervisor of track on the Pennsylvania with headquarters at North Philadelphia, has been appointed division engineer of the Elmira division at Elmira, N. Y., succeeding **N. M. Lawrence,** transferred to the Buffalo division with headquarters at Buffalo. Mr. Lawrence succeeds **J. M. Fair,** transferred to the Long Island division at Jamaica, N. Y. Mr. Fair succeeds **J. G. Hartley,** appointed assistant engineer in the office of the chief engineer at Philadelphia.

S. B. Wass, terminal engineer of the Canadian National during the building of the Toronto viaduct, will have juris-

The AMERICAN AUTOMATIC CONNECTOR

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THE SUCCESSFUL AND INTELLIGENT DEVELOPEMENT OF A SCIENTIFIC PRINCIPAL UNDER PRACTICAL AND EXHAUSTIVE DEMONSTRATION FOR THE PAST TEN YEARS

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THE CONSOLIDATED CONNECTOR CORPORATION
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diction over the Montreal terminal outside of the central station area, as assistant to C. B. Brown, chief engineer of the project.

Obituary

Captain W. A. Pratt, pioneer civil engineer in railroad work, died at Waynesboro, Va., March 16, aged 80. Captain Pratt helped in the construction of the Baltimore & Ohio, and laid the first railroad line in Alaska. His engineering work also carried him through Mexico and Canada. He was a captain in the engineers corps of the United States army during the Spanish-American war.

Charles T. Airey, vice president of the Central of Georgia, died unexpectedly in a hospital at Savannah, March 14, aged 63. He started his railroad career in 1882 at Selma, Ala., as a clerk in the shops of the East Tennessee, Virginia & Georgia Ry., now a part of the Southern Railway. He had held the office of vice president and general manager of the Central of Georgia since 1919.

J. H. Stanfiel, assistant to the vice president in charge of operation of the Southern Railway, died at his home in Washington, March 13.

William H. Miner, financier and railroad supply manufacturer of Chicago and Chazy, N. Y., died at Plattsburgh, N. Y., April 3, aged 69. Mr. Miner was president of the William H. Miner Co., and a director in many corporations. He was also the holder of the patent of a widely used coupling device.

Frank De Vaulle Fenn, former general manager of the railroad sales department of the Crane Company, Chicago, died at his home in Chillicothe, Ill., March 3, aged 63. Mr. Fenn retired from active service in 1919.

Alexander C. Shand, former head of the engineering department, and assistant to the vice president of the Pennsylvania, died at his home in Philadelphia, March 8, aged 72.

Charles Ffolliott, chairman of the board of A. Guthrie & Co., Inc., St. Paul, died in that city, March 22, aged 78. Mr. Ffolliott had been engaged in railway construction work for 49 years.

S. A. Stockard, director of transportation of the Atlantic Coast Line, with headquarters at Wilmington, N. C., died March 22, aged 46.

D. P. Thompson, assistant to the president in charge of operations of the Inland Steel Co., Chicago, died at Miami Beach, March 24, aged 50.

Lewis E. Gettle, chairman of the railroad commission of Wisconsin, with headquarters at Madison, died March 18.

E. E. Lillie, superintendent of car service and telegraph of the Spokane, Portland & Seattle, with headquarters at Portland, died in that city, March 14, aged 60.

C. M. Hitch, district master car builder of the Baltimore & Ohio at Cincinnati, died March 1.

O. F. Spindler, general agent for the Chicago Great Western at San Francisco, died in that city, March 6, aged 70.

F. A. Lorenz, Jr.

Supply Trade Notes

The American Steel Foundries announces the appointment of **F. A. Lorenz, Jr.,** as general manager, Indiana Harbor and Pittsburgh Works, in charge of sales and production. Mr. Lorenz has held the positions of manager of sales, Davis Wheels, assistant to the fourth vice president, and works manager, Indiana Harbor Works. He now leaves the position of assistant vice president in charge of operations to assume the combined responsibilities of sales and operations of the Indiana Harbor and Pittsburgh Works.

The Standard Steel Car Co. has been reorganized and consolidated with the **Pullman, Inc.,** and the new company named the **Standard Steel Car Corpn.** The officers are: **P. H. Joyce,** president; **P. G. Jenks,** vice president; **R. L. Gordon,** vice president; **C. P. Stembel,** vice president; **B. P. Newton,** vice president and controller; **William Bierman,** secretary and general manager; **J. A. Mountain,** assistant secretary; **C. L. Spence,** treasurer; **C. B. McMillan,** assistant treasurer.

George B. Powell has been appointed district sales manager of the **American Locomotive Co.** and the **Railway Steel-Spring Co.,** with headquarters at the Syndicate Trust Bldg., St. Louis, succeeding **Edward C. Fisher,** deceased.

Frederick V. Green, former vice president of the **Pittsburgh Testing Laboratory,** is now connected with the **Triplex Safety Glass Co.,** Clifton, N. J. Mr. Green will have charge of the railway business in the eastern territory with headquarters at 32 West Fortieth street, New York.

Due to increased business, the **Chicago Pneumatic Tool Co.,** New York, announces the opening of branch offices as follows: Perrine Bldg., Oklahoma City, Okla.; 327 Philcade Bldg., Tulsa; Merchants & Manufacturers Bldg., Houston. There are service stations and warehouses at Oklahoma City and Houston where air and gas compressors, engines, pneumatic and electric tools, rock drills, etc., will be carried, as well as parts for servicing.

The office of the **Reliance Mfg. Co.** in Detroit has moved from 650 Baltimore avenue, West, to 9771 French road.

G. A. W. Bell, Jr., maintenance inspector on the staff of the chief engineer maintenance, of the Baltimore & Ohio, has resigned and joined the sales department of the **Northwest Engineering Co.,** with headquarters at Washington.

J. B. Strong, president of the **Ramapo Ajax Corpn.,** has been appointed an executive member of the **Railway Business Assn.,** succeeding **Alexander Turner,** resigned.

The Harnischfeger Sales Corpn., Milwaukee, has appointed **R. H. McGredy** its representative in New York with headquarters at 50 Church street.

J. E. McCaulley, eastern district sales engineer of the **Union Switch & Signal Co.** at New York, has been appointed resident manager of the Pacific Coast district, with headquarters in the Matson Building, San Francisco. Mr. McCaulley succeeds **S. E. Gillespie,** elected vice president of the **Westinghouse International Brake & Signal Co.**

The Water Development Co., St. Louis, has appointed **H. E. Passmore,** eastern railway sales manager, with headquarters at 207 Investment Building, Pittsburgh.

The Chicago offices of the **Okonite Company,** the Okonite-Callender Cable Co., Inc., and the Hazard Insulated Wire Works division of the Okonite Company, have been moved to suite 2828 of the 20 North Wacker Drive Bldg.

The Wrought Iron Co. of America, Lebanon, Pa., has entered into an agreement with the **Lloyd Forge Co.,** Annville, Pa., to sell Lloyd's output of patent turnbuckles.

The New York office of the **Bradford Corpn.** has moved from 23 West Forty-third street to 370 Lexington avenue.

Transportation

(Reg. U. S. Patent Office)

The National Monthly
of the Transportation Industry

Vol. VI

No. 5

FEATURES *for May,* 1930

Picture on the Cover, *A. M. Tidd*

The Railways of Jamaica, *J. Powter*
Director, Jamaica Government Ry.

Master Clocks of the Country, *Don Charles*

A Prophecy for Travelers of the Future, *C. W. Heath*

The Sportsman, Train De Luxe, *Charles Dillon*

Air Ferries Win Popularity, *King W. Grayson and W. H. Rosser*

It's Hard to Beat the Dutch, *King W. Grayson*

Some Queer Things in the News, *Department*

Editorial Comment, *The Editor*

Little Stories About Big Men, *Department*

The News of the Month, *Department*

Inland Waterways report still another yearly deficit, and Canadian engineers declare against the proposed St. Lawrence project.

June, A Busy Month

MEETINGS of importance to transportation interests will be numerous in June, and in widely separated places. The first of these will be the yearly convention of Division VII, A.R.A., Freight Claims, at Seattle, June 10-13.

The American Association of Railroad Superintendents is to meet at the Hotel Nicolett, Minneapolis, June 16-19.

The most important gathering of the year, from the railroad point of view, will be that of Division V, Mechanical, at Atlantic City, June 18-25. The Railway Supply Manufacturers' Association will meet at the same time and place.

Division VI, Purchases & Stores, will assemble at Atlantic City, June 18, and remain in session for two days, and this, with the same dates, applies to Division VIII, Motor Transit, also at Atlantic City.

The American Railway Development Association will meet at Duluth, and the Railway Treasury Officers' Association at Cleveland for two days' sessions, June 18-20.

The outstanding event of 1930 for electric railway and street car people will be the convention of the American Electric Railway Association at San Francisco, June 23-26, the first time this organization has visited the Pacific Coast.

This convention will move on special trains to Los Angeles after adjournment for special entertainment to be provided there by the railroads and the city.

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LIMA LOCOMOTIVE WORKS INCORPORATED

OHIO

The Hotel Tichfield at Port Antonio, Jamaica.

The Railways of Jamaica

Baldwins On a Government Line

By J. Powter

Director, Jamaica Govt. Railway

THE HISTORY of the Jamaica Government Railway begins in 1845, with the opening of a privately-owned railway known as the Jamaica Railway, between Kingston and Angels, a little over 14 miles. In 1869 a branch from the ancient Spanish capital of the island, then known as St. Jago de la Vega, and now known as Spanish Town, was completed as far as the town of Old Harbor. Ten years later, in 1879, the government of Jamaica purchased the entire property of the Jamaica Railway Company for £93,932 which represented only about one-third of the capital expenditure. Extensions from Old Harbor to Porus, and from Angels to Ewarton were opened in 1885, the mountains at these two termini deterring further extensions. In 1890 a foreign syndicate bought up the whole railway for £800,000 under bond to extend it from Porus to Montego Bay, over the well-known "Melrose Hill," and from Bog Walk ("Boca del Agua" was its more musical Spanish name), to Port Antonio, the promised extensions being opened to Montego Bay in 1894, and to Port Antonio in 1896. Financial difficulties soon followed, and possession of the railway was again secured by the government of Jamaica in August, 1900, and it has since been administered as a government department.

Additional construction was not undertaken until 1912, and a year later a 13-mile branch line from May Pen to Chapelton was opened for service. In 1921, another branch line was built from Linstead (on the Ewarton Line), to New Works, a center of the sugar cane and banana area. The latest construction completed is that of the extension of the Chapelton branch to Frankfield which was formally opened by the then Governor, Brigadier General Sir Samuel Wilson, in 1925.

The total mileage now amounts to 210 miles of main line and 35 miles of sidings, making a total of 245 miles of standard (4 feet 8½ inches) gauge track, which is now being relaid throughout with flat-bottomed

Loading Bananas at Frankfield.

rails weighing 80 pounds to the yard. Sharp curves and heavy grades are encountered at many points on the lines, which reach a maximum altitude of 1760 feet above sea level at Greenvale Station.

The severest tests of the efficiency of the motive power (and of the fireman) is found on the "Melrose Hill," between Porus and Williamsfield. The train leaves the first named station, 435 feet above sea level, and winds its way around the mountain to Williamsfield, which has an altitude of 1300 feet above sea level; a climb of 865 feet in 6¼ miles over a maximum grade of 1 in 30 with sharpest curves of five chains (330 feet) radius not compensated, there being many reverse curves without a tangent between. The views from the train when passing over this section are magnificent and well worth the trip from Kingston to Williamsfield and back. Williamsfield is the station used by those traveling to the resort at Mandeville five miles to the south.

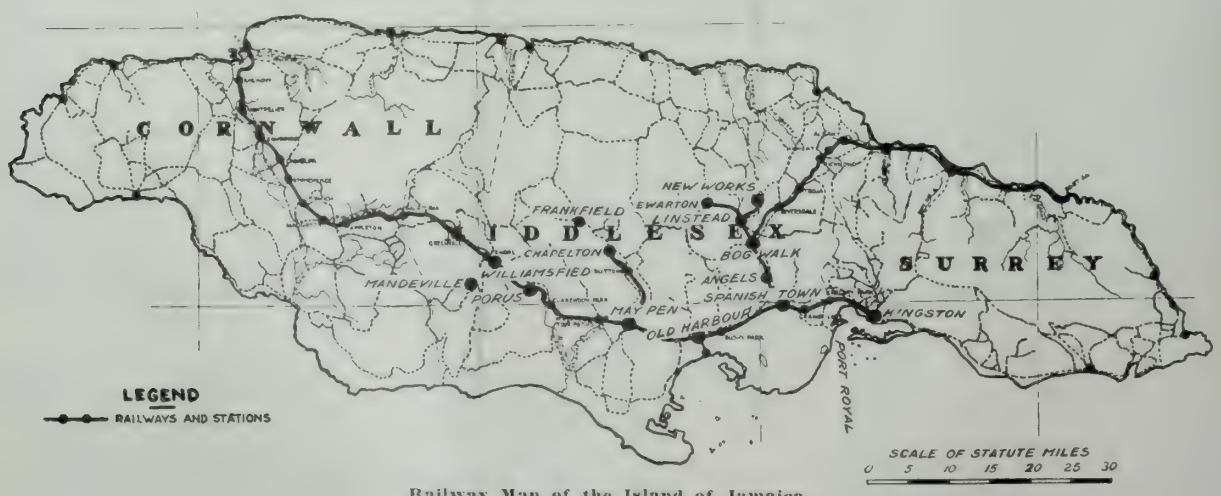
On the branch from May Pen to Frankfield the maximum grade against the load is 1 in 40 and against the empties is 1 in 33, with curves slightly over 7 chains (462 feet) radius. From Bog Walk to Port Antonio, a distance of 55 miles, the maximum grade is 1 in 30, with sharpest curves of 5 chains (330 feet) radius. Twenty-four tunnels are encountered on this line, 16 of which occur within 15 miles. The longest tunnel is 2194 feet in length and is known as the "Gibraltar Tunnel."

In the last two years the railway has made a vigorous attempt to secure tourist traffic and it is felt that the number of tourists and visitors to the island would greatly increase if the beauty of the scenery were only better known.

A favorite day trip, which is arranged in conjunction with the tourist agencies, is between Kingston and Port Antonio, one half of the party going by train to Port Antonio, and the other half by road, the process being reversed on the homeward run.

The rolling stock of the Jamaica Government Railway consists of 43 locomotives, 34 passenger coaches, 532 freight, fruit and cane cars, one 40-ton traveling locomotive crane and two small traveling cranes.

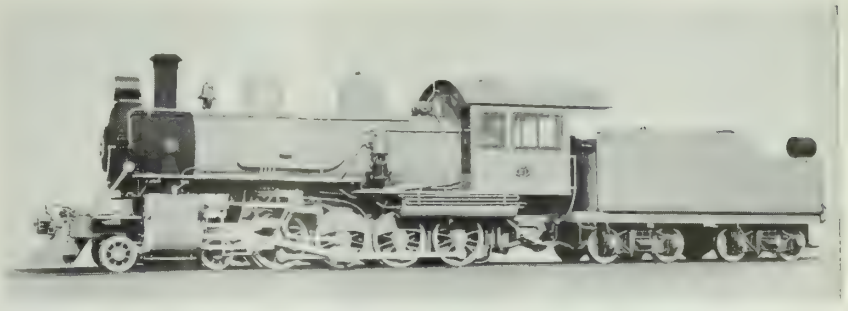
The Baldwin Locomotive Works have on various occasions furnished locomotives to the Jamaica government, first in 1907 when two engines were constructed. These locomotives were of the 4-8-0 type having cylinders 19 by 26 inches (a Jamaica Government Railway standard) and Stephenson link motion. In 1911 two Mikado (2-8-2) type were purchased, these being the first engines on the line to have Walschaerts valve gear; these were followed in 1914 by four engines of the same type but fitted with superheaters and piston valves. Two Mountain (4-8-2) type engines were completed and shipped in 1916, which incidentally were the first locomotives of this type ever constructed by the Baldwin Locomotive Works. Additional orders followed, three locomotives being furnished in 1919, and three in 1920, all of the 4-8-0 type. It was one of the Mountain type engines, No. 40, that had the honor of hauling the special train conveying the Duke and Duchess of York from Ewarton to Kingston on January 21, 1927, during their visit to Jamaica. The engine was specially



Railway Map of the Island of Jamaica.

named "Duchess of York" for the occasion, and the Pullman saloon car, originally purchased in America by Sir Henry Norman (a former governor of the island) was specially redecorated and furnished for the occasion. It will be a satisfaction to American car builders to hear that the royal party commented upon the comfortable riding of this car.

The railway operates adequate repair shops at Kingston, capable of maintaining all locomotives and cars in good condition. Adjoining the shops is a 12-stall enginehouse, each stall provided with a pit. Access to the enginehouse is obtained over a 70-foot turntable and adequate water and coaling stations closely adjoin the main line leading to the turntable. These shops are modern in every respect, having been remodeled, reequipped and electrified in 1923. The modernizing process still continues, and at the moment a new, large, heavy-duty wheel lathe and a 200-ton hydraulic wheel press are being installed.



One of Six 4-8-0 Type Locomotives Ordered by the Jamaica Government Railway from the Baldwin Locomotive Works in 1919.

A Baldwin Mikado Type, Four of Which Were Built in 1914. Two Mikados Similar to the One Shown, but Without Superheaters and Piston Valves, Were Furnished in 1911.

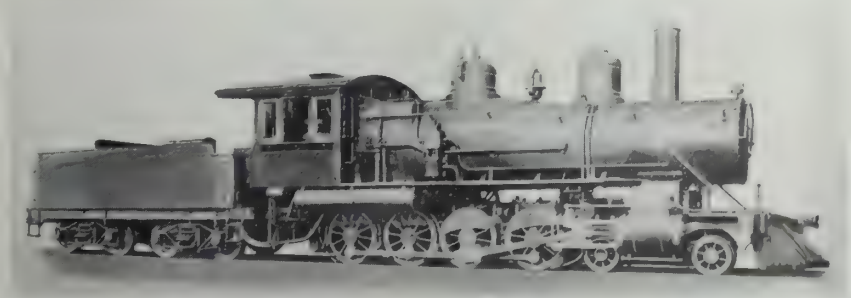
The Farmer's Cost of Living

To determine what part of the family living actually comes from the farm, 22 farm home makers in Frederick County, Md., agreed to cooperate with the bureau of home economics of the United States department of agriculture in keeping exact records for 12 months. Their reports, though not conclusive, give a very good picture of what the farm supplies.

Articles brought in from the garden or storeroom for use by these families were weighed and a record made. Prices were assigned to such articles by workers from the bureau after they had visited the shops where the home makers traded, and determined what city families would have to pay for articles similar to those supplied by the farm. A complete account of all cash expenditures was kept.

In actual cash these families spent an average of $1,712.70 for the year. This varied from $737.70 for one family to $3,734.50 for another. Add to these cash expenditures the money value of the family living supplied by the farm, that is, of the food, fuel, ice, and 6 per cent of the equity in the house (a normal return if the money were otherwise invested). Then the total living expenditure of these 22 families ranges from $1,217.71 to $4,942.18, the average being $2,701.63. The average value of family living supplied by the farm, therefore, is $988.93, or about 36.7 per cent of the total living cost.

Food was the largest single item in these family budgets supplied by the farm, and valued at $651.44, was 24.1 per cent of the total value of family living. Housing was the next important item, being valued at $280.64. Fuel produced by the farm varied from $5 to $116.50 a year. Ten families did not have ice on the farm. For the entire group the average value of ice supplied by the farm was $5.28.



One of the Two 4-8-0 Type Locomotives Built by the Baldwin Locomotive Works in 1907.

State Should Pay the Erie

A statement just issued by the state publicity department says that since 1846 what was originally the "New York & Erie Railroad Company," now known as the Erie, has paid over $800,000 to the commonwealth of Pennsylvania for the privilege of crossing the northeastern corner of the state. Under the terms of the act granting the company right of way through Pennsylvania it is required every January to pay $10,000, and its neglect or refusal to pay this sum would result in forfeiture of rights and privileges granted under the act of Mar. 26, 1846.

Records unearthed by Treasurer Martin show that a long time ago the railroad company did not trust the mails nor use checks or drafts in making its annual payment, so great was its fear that an accident might cause forfeiture of its rights. Every January it sent a special messenger to Harrisburg, who carried $10,000 in legal tender and insisted upon paying it in person to the state treasurer, taking his receipt. The practice

Special Train Conveying Their Royal Highnesses the Duke and Duchess of York From Ewarton to Kingston, January 21, 1927.

of sending messengers to Harrisburg has been discontinued in this particular instance, but many railroad corporations send attorneys to the treasury annually with tax payments. Among the list are railroad corporations whose attorneys carry checks for $1,000,000 or more.

Stop, Look and Listen

Who created the sign or slogan Stop, Look and Listen? Colonel J. C. Fuller, vice president and manager in charge of construction of the old Gettysburg & Harrisburg Railroad, now part of the Reading System, tells the Atlanta Journal that, "In building the Gettysburg & Harrisburg Railroad we were obliged to cross many public roads and were about to prepare a notice to put at each crossing when my attention was called to a court decision in a suit brought for injury at a crossing. The judge made use of this language—that it is the duty of every one to 'stop, look and listen' before crossing a railroad. I at once adopted the words 'stop, look and listen,' believing it a legal point in determining the responsibility of both the public and the railroad. I have always felt that the use of the phrase originated with me, feeling considerable pride when it was adopted by the Reading by Mr. McLeod, the president, and the general superintendent, Mr. Sweigard."

Snails Halt Locomotive

Locusts have been known to stop trains in Egypt and Tunis, and grasshoppers have done the same trick in Argentina, while the despised caterpillars have often gathered on the rails in certain American states to stall the wheels of the locomotives, but a story is being printed in the Paris press from Morocco showing that the humble snail has been successful in holding up railway traffic in the French zone there. A heavily laden freight train was on its way from Casablanca to Kourigha when it was found that the wheels of the locomotive, although they continued to revolve, made no progress. An investigation proved that the rails were covered with millions of snails. Sand placed on the tracks enabled the locomotive to plow its way through the invaders, but eventually it had to stop and wait until a relief engine arrived from Kourigha.

Nothing is really work unless you would rather be doing something else.
Sir J. M. Barrie.

This Viaduct Carries the Frankfield Line Over a Mountain Ravine of Surpassing Beauty.

The Master Clocks of the Country

By Don Charles

Air View of the U. S. Naval Observatory, Washington. The Half-Circle Highway Is Massachusetts Avenue, Designed to Prevent Vibration From Traffic.

TIME is one of the gods of national transportation. Yet, in terms of minutes, hours, days or years, time is taken for granted. The hour the clock announces is considered simply the time. In reality time is an unbroken stretch which man has marked off in logical but arbitrary divisions.

Time does not begin at midnight or noon. It always is going, even as a railroad always is going. It is never stationary. There is always movement, progress.

The time by which we plan our lives, the ordinary, familiar time used for dispatching trains, is calculated directly from the stars, even to the one-thousandth of a second. Such an evanescent atom fails to register, even among men who are forever conscious of time in their business of moving from one place to another. Yet such a tiny degree is noted at the United States Naval Observatory where the time of the nation is guarded, recorded, checked and pulsations sent out marking its accuracy.

Clocks and watches all over the country are checked by the radio time signals sent out from the naval observatory or by the signals sent over the telegraph wires. Standard time at Uncle Sam's precise laboratory is checked by sidereal or star time.

Three master clocks are kept at the observatory in an underground vault, under uniform temperature and air pressure, and never are disturbed except for repairs. These keep sidereal time. The time is transmitted from them by electricity to the "time room" from which the radio and telegraph signals are sent.

Time signals by which railroads regulate their own clocks are now automatically sent out by the transmitting clocks. The time registered by these instruments is compared with the recording of the master clocks and with Greenwich time.

Radio dashes are sent out every second for five minutes, at 2:55 a.m., 11:55 a.m., and 9:55 p.m., Eastern Standard time. The twenty-ninth second and the fiftieth to sixtieth seconds are left blank to identify the end of the half minute or minute.

These signals are sometimes thought of as coming from Arlington or other radio stations. In reality, they come directly from the time room at the U. S. Naval Observatory at Washington. The transmitting clock sending the signals stretches a long telegraphic arm to Arlington and Annapolis, and the two radio stations are under temporary automatic control. Four other stations, at Great Lakes, Key West, New Orleans, and San Diego, transmit the naval observatory signals, received through Western Union lines.

The observatory signals were sent out first so that navigators could check their chronometers before leaving harbor. Now they are used all over the world, and by ships and railroads of many nations, by surveyors in Alaska and explorers in the Arctic and Antarctic regions.

There are three kinds of time in use, or three ways of measuring time. Sun time, or local apparent solar time is told by the position of the sun in relations to the earth. This can be read by sundials. But because of the irregularity of the earth's motion in its orbit, apparent solar days vary in length and thus the time is not constant.

Sidereal time is used by astronomers, and is an accurate basis for checking. The exact times at which certain stars are in certain positions is observed; the correct time of passing those positions is known by previous records and calculations; thus

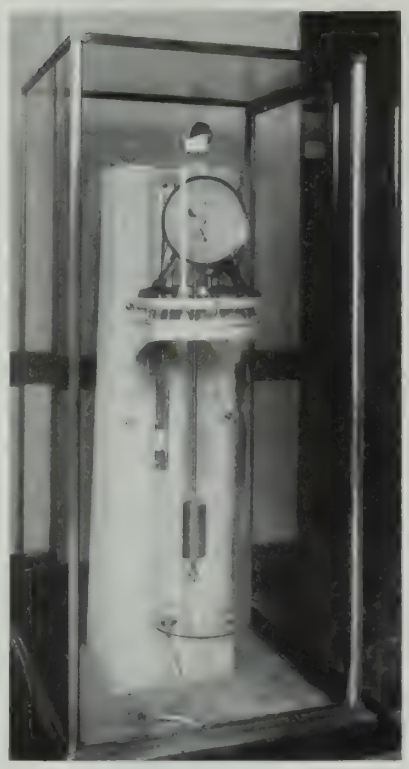
comparison between the known time and the time recorded by the clock during the observation shows any error of the clock. Sidereal time may be considered the perfect abstract time, because the stars are so many light years away that their variation cannot be detected.

The time in ordinary use is mean solar time. This is an average time, used so that all the hours can be precisely the same length. There is a variation between apparent time and mean time; that at its widest point is 15 minutes. What is generally considered time, then, is neither measurement by the stars nor accurate measurement by the sun; it is a popular rendering of time, averaged arbitrarily for convenience.

A new method of determining time has been discovered by Capt. F. B. Littell, and J. E. Willis of the observatory. This method is being practiced satisfactorily now, and after a few minor corrections it is hoped to put it in general use.

The new method is based on pictures taken of the stars by photographic telescopes. It is an adaptation of the photographic reflex zenith tube, now used to find variations of latitude, to the determination of time.

A photographic plate is used, which is stationary in the east-west direction. The image of a moving star passes over this plate. At every second of time the plate is moved a slight distance in the north-south direction and back again to the original position. Thus the path of the star is marked off in seconds, and the plate shows a series of dashes corresponding to the trail of a star, with a series of dots at one side marking the seconds.



The Riefler Clock in the Naval Observatory.

Some of the advantages gained are the use of an independent method of time determination to compare with the one in general use, the permanent record of photography and the greater accuracy obtained.

Although mean solar time is in use throughout the country, it is subdivided into four kinds of time, or, more exactly, four translations of the same time. Since the sun does not cross the meridians in different parts of the country simultaneously, there is the variation in solar time noticed in transportation. To make the situation as simple as possible, four time zones have been created, with one hour's difference in time between each. All the points in each zone use the same uniform time. The exactitude of variations makes the calculations easy. The time signal sent out from the observatory at 3 hours, Greenwich time, serves as a 10 p.m. signal in the eastern zone, a 9 p.m. signal in the central zone, and 8 p.m. signal in the mountain zone and a 7 p.m. signal in the western or Pacific zone.

The present system of time as given on clocks, which has become so natural that it seems as if it has existed always, may be changed in the future. A new system is being considered in the United States and other countries, which would mean adopting everywhere one time, "world time."

Living by world time would seem contradictory or wrong at first, since a person could find himself getting up at daybreak, with the clock registering an hour he had been accustomed to think of as noon or midnight. But the knowledge that one time was being used in all parts of the world would give the intricacy of time determination a needed clarity.

Pacific Railway Club's New Staff

Celebrating the completion of its thirteenth successful year with a banquet at the San Francisco Elks Club,

By Act of Congress no Street or Building Is Permitted Within 1,000 Feet of This, the Main Structure, in Which Time Is Regulated.

March 13, Pacific Railway Club installed the following officers to function during the coming year: president, J. P. Potter, vice president, Key System Transit Company; first vice president, Frank E. Russell, mechanical engineer, Southern Pacific Company; second vice president, Lacy L. Galbraith, conductor, Atchison, Topeka & Santa Fe Railway Company; treasurer, D. C. Wilkins, commercial agent, Western Pacific Railroad Company. William S. Wollner, general safety and welfare agent of Northwestern Pacific Railroad Company and Southern Pacific Golden Gate Ferries, Ltd., who has been the club's secretary since its organization, will continue to function in this capacity.

These officers, assisted by the board of governors, consisting of J. A. Christie, Santa Fe, D. A. Porter, Southern Pacific, F. E. Yoakum, and J. P. Quigley, Western Pacific, are planning a year of interesting and unusual meetings. The first of these was held in Sacramento April 12. Nearly 50 members of the club journeyed from the San Francisco bay district to this meeting in a special car placed at their disposal through the kindness of one of the club's past presidents, Harry A. Mitchell, president of Sacramento Northern Railroad. Upon arrival at Sacramento, the party was met by local members and taken in automobiles to the Southern Pacific's general shops. The afternoon was spent in touring these shops, the second largest in the United States.

Transmitting Clock and Time Signal Switchboard in the Naval Observatory. This Is Where Railroad Men's Time Originates.

Mechanism of the Naval Observatory Where the Nine-Inch Transit Telescope Is Used in Determining Time by the Stars.

The club's monthly meeting was held in the Masonic Temple in the evening, with several hundred members and guests present. The topic of the evening was "The Younger Man in Railroading, His Responsibility and Ours". The first part of this subject was presented by Chester Mitchell of the Southern Pacific stores department, and the second by E. E. Gleason, assistant to superintendent of motive power of the Western Pacific. Train and engine service phases were presented by E. R. Du Brutz, engine foreman of the Western Pacific.

An address on the Latest Mode of Transportation, illustrated with motions pictures, was presented by W. H. Ostrander of T. A. T.-Maddux Air Lines.

The May meeting of the Pacific Railway Club is to be held at the Hotel Oakland, Oakland, Cal., May 8. The speaker is to be William M. Barr, consulting chemist of the Union Pacific System, Omaha, whose topic will be "Engine Failures and Materials."

Every great and commanding movement in the annals of the world is the triumph of enthusiasm.—*Emerson.*

Inland Waterways Report More Loss

THE ANNUAL report of the Inland Waterways Corporation for the calendar year 1929, made public April 8, showed a net loss for the year of $108,295.

The total net income from operations amounted to $364,097, of which $362,663 was derived from operations of the lower Mississippi divisions, and $1,434 from operations of the Warrior River terminal company.

The corporation, however, reported a total savings to the public on tonnage transported by the Mississippi-Warrior service during 1929 of $2,600,000. Despite this showing, the report asserts that the corporation had proved its value as a demonstrative agent. On this point, it says:

That its mission in carrying out the policy of congress to encourage, promote, and develop water transportation, and to foster and preserve in full vigor both rail and water transportation has become recognized as a national issue, and is not to be viewed as a series of local projects for the benefit of particular sections of the country, is evidenced by the keen interest in its policies and its progress throughout the United States. The report discusses the question of getting the government out of business.

"We have constantly borne in mind," it says, "the fact that the primary object of the corporation is the demonstration to private capital and the public that through coordination, cooperation, and supplementation of all forms of transportation, there will result a cheaper form of transportation, available to all the citizens of the United States, and better than that offered to all the people by any single form, with a resultant living revenue to the participating carriers.

"We have encouraged and assisted every form of water transportation, even that in direct opposition to our own operations, because it has been realized that although the governmental corporation would lose freight carried by its water competitors, it has, nevertheless, been fulfilling the purpose for which it was created, namely, the promotion, encouragement, and development of water transportation by the expenditure of private capital in the construction and operation of independent fleets.

"We may lose more and more freight as private competition increases, but if the time should come that the government barges ride high and dry on the rivers, with empty holds, and their crews look at privately owned tows pushing through the stream, laden until their decks are awash, then the government's final success in business will be written when it is driven out of business. We can sell our towboats and barges for a song and rest on our laurels, because we will have rehabilitated water transportation."

The report cites figures to show the comparative results of operations by the Inland Waterways Corporation created in 1924 as the successor of the Inland and Coastwise Waterways Service, as follows:

"The average yearly loss of the Inland and Coastwise Waterways Service was approximately $1,000,000.

"For 1925 to 1929, inclusive, the average net income of the corporation has been $81,892.39 a year.

"There should be no concern because the government barge line did not carry as much in 1929 as it did in 1928.

"The total tonnage carried by all our facilities in 1928 amounted to 2,245,849 tons; in 1929, to 2,114,470 tons, a difference of 131,379."

What Canadian Engineers Think

Henry Holgate and J. A. Jamieson, the engineers who made a survey of the proposed St. Lawrence River waterway, are strongly opposed to the project. The Montreal Board of Trade in making public its report has not yet acted upon its recommendations.

The Canadian report disputes "the extravagant claims, principally American," as to the possible savings on grain shipments over this proposed route—"claims varying from six cents to ten cents a bushel." A maximum saving of only two cents a bushel is believed possible in the opinion of the Canadian engineers, "but the seasonal character of the traffic, the very short period during which grain could be moved by ocean vessels direct from the head of the lakes, and the dependence of tramp rates and the supply of tramp vessels on world-wide traffic conditions would necessarily be reflected in the actual rates."

Approximately 85 per cent of the traffic of the St. Lawrence route consists of grain, says the report. But the growing importance of Vancouver as a grain shipping port leads the engineers to believe that the grain traffic which the St. Lawrence route formerly enjoyed may be diverted west in increasing proportion. From 1923 to 1929 grain shipments from Vancouver almost quadrupled, it is shown.

"In many discussions on the St. Lawrence River project," the report says, "especially from American sources, this work is referred to as if it were a new route for grain from the West, and many writers have ignored the fact that the existing canals have provided for about 30 years a very satisfactory route for the carrying of all the grain that has been offered for transport.

"It now is quite evident that these canals have never been used up to their capacity, and it is not at all certain that the canals will be called on to carry more than they have already carried; at any rate, expansion of grain exports is not likely to increase at the rate they have in previous years, while this trade was being built up.

"It is a fact that the western grain reaching Chicago is mostly carried east by railway, and that the lakes and canals carry the remainder, and what has already proved to be a commercial fact will likely continue for economic and seasonal reasons, so that a 50 per cent increase over the 1928 tonnage may be very problematical.

"This is emphasized by the grain-growing situation the world over, and by the development of newer grain-carrying routes, and the decreasing exports of United States grain, all tending to direct attention to serious consideration to any enlarged scheme of navigation on the lake route and calling preferably for the more efficient use of present facilities rather than their abandonment for something larger that probably will never be used up to its capacity or possibilities, and will represent only a huge outlay for no practical purpose."

Mice Use Car for Corn Bin

Failing to start his motor when the starter switch was closed, a resident of Middlebury, Ind., who had kept his car in storage for the winter months tinkered for some time and concluded that something was radically wrong inside the motor. There was. Taking off the cylinder head he found that corn was solidly packed around the valves and in the exhaust manifold. Mice had used the motor for a home and storehouse during its storage period, entering through the muffler and exhaust pipe, a distance of 80 inches.

A Prophecy for Travelers in the Future

By C. W. Heath

Two Kinds of Transcontinental Travel Facilities Offered by the Union Pacific Ry.

OWING TO the rapidity with which motor coach transport has grown for the past several years, it is doubtful whether complete figures for the industry for any given period would be accurate from issue to issue of any magazine.

Recently there was made to the house committee on interstate and foreign commerce by the National Association of Motor Bus Operators, the following statement:

In 1929 there were in operation 35,258 common carrier buses in the United States. These common carriers' buses operated over 289,000 miles of highways and transported 1,560,000,000 passengers, of whom more than 185,000,000 were moved exclusively in interstate commerce. It appears, however, that these figures do not include non-revenue passengers, such as schools, hotels or industrial plants.

Figures for 1929 show there were 95,000 motor buses in use in the United States of which 43,000 were used by 16,500 consolidated schools; 11,500 by 300 street railways, and 1,900 by 70 steam railroads. In addition, there were 75 steam railways operating a total of 7,000 motor trucks in their shipping service. The same report shows there was in the United States 3,016,281 miles of highways, of which 660,000 miles were surfaced. Highway and street expenditures for the year were two billion dollars.

Using these figures for a basis leaves 14,842 buses for city service, other than for street railways, hotels, industrial plants and real estate service. Allowing 40,000 estimated route miles for city service operations, we have 249,000 route miles for other common carrier buses, not including schools, which is nearly as much as the mileage of the steam railways of the country.

At the present rate of increase in automotive common carriers' business, 1930 will produce revenue close to a quarter of a billion dollars, which will be for city, inter-city, intrastate, interstate, sight seeing and charter service.

Companies operating in the common carrier field during 1929 have shown considerable decrease while their route miles have increased. Also, there is shown an increase in the number of buses used in 1929 over the previous year. The conclusion is drawn, therefore, that these changes came through mergers and the growth of industry.

In Los Angeles County, California, motor coaches of the three major companies operating city service, carried revenue passengers for the calendar year 1929 to the number of 35,801,737 which was divided as follows:

Los Angeles Railway's motor coach division	10,378,834
Pacific Electric Railway's coach fleets	8,330,574
Los Angeles Motor Coach Co. (owned jointly)	17,092,329
Total	35,801,737

In California, operators of motor coaches under the jurisdiction of the railroad commission in 1929 were authorized to issue $1,926,706 worth of securities. The total issues of stocks, bonds and notes authorized issued for public utilities of all sorts were $103,288,473.78 for the year, a decrease of some 45½ million dollars under the amount for the previous year. This grand total authorized issued was for the following purposes:

Additions and betterments	$71,718,736.00
Refunding	4,718,789.12
Reorganization	26,850,948.66
Total	$103,288,473.78

Ten years ago there was not more than one fleet of 100 or more buses

Parlor Car Used by Pacific Electric Railway on Steamer Trains Between Los Angeles and the Harbor.

in the United States. Today, there probably are 45 such fleets. In the early days of the motor coach industry, electric and steam carriers looked with disfavor upon the bus. This view has now changed greatly. Today, what is reported to be the largest fleet owned by any carrier is that of the Public Service Co-ordinated Transport of New Jersey, estimated at 2450 units, based upon rate of growth from date of last available information.

One of the leaders of the electric group now operating motor coaches is the Philadelphia Rapid Transit Co., which controls practically all street railway, subway, elevated, motor coach and taxicab operations in its territory; and some air service is also under its management. Others are the Pittsburgh Railways Co.; Cleveland Railways Co.; Chicago Surface Lines; Chicago, North Shore & Milwaukee Railroad; Key System; Los Angeles Railway Corpn.; Pacific Electric Railway; St. Louis United Railways, and Milwaukee Electric Railway & Light Co.; Kansas City Railways; Washington (D. C.) Railways; Illinois Power & Light Corpn.; Stone & Webster properties and others, the total being about 300.

Of the steam railways group, some of the leaders are the Southern Pacific, Pennsylvania, Santa Fe, Union Pacific, St. Louis-Southwestern, Chicago & Alton, Chicago, Burlington & Quincy, Great Northern, Boston & Maine, Baltimore & Ohio, and others to the number of 70 now engaged in motor coach operation. Of steam railroads using trucks in their freight service there are 75.

Motor coaches have filled and will continue to fill a very definite need. They will never obliterate the street car or the passenger service of the steam railroads, nor should they because each is correlative. There will be instances, of course, where the bus will supersede other methods of transport. A recent Associated Press dispatch said the first commercial street railway in the world in Berlin, had been dismantled, the service being replaced by omnibuses. The same change has been made also at Wiesbaden.

The transportation of the future is a subject so vast and of such far-reaching possibilities that it seems almost too gigantic even to contemplate. The great service of the railways and steamship lines of the future doubtless will be in the movement of freight. Much of the passenger movement of the future will be in the air at a great saving of time, and on the highways at somewhat lower fares than for rail service. Passenger trains will be operated, of course, but they will be fewer though far more luxurious than those of the present. Many branch rail lines will be abandoned in favor of motor coaches and trucks over highways built on the dismantled rail lines' right of way. These highways may obtain revenue through toll charges for other classes of carriers. Much of the motive power may be changed.

Such statements may seem fantastic to many of the more conservative. Just the same they are in the making. The railroad managements are not going to sit idle while airways and highways take the traffic. When such leaders as those heading the great transportation systems of the country commit themselves definitely to highway transport, and a part of the group have turned to the air, it seems more than probable that many improvements are possible, and much of the transformation will be seen by the present generation.

The day is fast approaching when street parking of automobiles in all of the larger cities will not be permitted, thus releasing much valuable space for the movement of traffic. Chicago now has a parking time limit of three minutes in the loop district. Great storage buildings will house cars forced off the streets and this will add much to the life of cars. The cost of such buildings will be more

New Type of Motor Coach Built by the Motor Transit Co., for Long Distance, and for Clubs and Special Parties.

than offset through savings for new streets, and traffic speeded up will effect a saving. Street intersections will be at two levels, permitting much faster traffic flow. Elevated streets are beginning to appear. Chicago went to the second floor, and Wacker Drive's twenty million dollar structure has proved a wise investment. Some of the through streets will be reserved for common carriers. Many of these carriers of the future, despite arguments to the contrary, will be auto-motive in character, and ways will be found to increase the efficiency of gasoline motors so that motor coaches carrying loads of 100 passengers or more, will be operated with no greater consumption of gas than is now required for family flivvers. Motor coaches with much larger passenger capacity than those of the present will be built. There has just recently been tested one with seating capacity for 53 persons.

Sleeper and buffet buses are now operated on the West Coast. Sleepers are in service out of Cleveland, while others are scheduled for the near future between Kansas City and St. Louis. Terminal hotels are being built and operated by some of the major stage operators. Those now in operation are in San Diego, San Francisco, Kansas City and El Paso, others are building at Eureka, Cal., and at Tulsa, Okla., while one is being planned for Los Angeles, and plans have been drawn for others at Oklahoma City, Ft. Worth and St. Louis. Many eating services are now controlled by motor coach operators. Modern terminals are operated in Omaha, San Antonio, Los Angeles, Portland, New York, Richmond, Cleveland, Chicago, Charlotte and many other points.

For the future, it is not too much to predict that in our generation, much rail, air, water and highway transport service will be coordinated. Passengers in transcontinental or long cross country travel may then use trains by night and travel by air and highway transports in daylight hours as they may now do on several leading railroads. Motor coaches will act as feeders for trains, with fewer train stops.

Much of the far north country is due soon to be opened to transportation by both air and highway. Plans for the International Highway, linking Seattle with Fairbanks, are going rapidly forward. Alaska now has seventy-one airports and more coming. Eventually air lines connecting Asia with Canada and the United States will be via Alaska.

Panama-Pacific Steamship line, with Transcontinental Air Transport and its allied rail lines, now offers water, air and rail service between Los Angeles, New York and Panama, with the full circle trip either direction of some 9,000 miles completed in 16 days. Air-rail traffic agreements have been made with some of the major rail carriers of the country. Such railroads as the Pennsylvania, Santa Fe, Texas & Pacific, New York Central System and others are associated in these enterprises. Air-rail traffic agreements are now many, and more constantly are in the making.

Much of the present day automobile traffic will disappear. Car users will turn to the air, going places in the family plane. Then we will have our air patrols as we now have highway police. Air travel of the future probably will operate at four or more levels to eliminate the possibility of collision. Such barriers as the Rocky Mountains will then be of no concern to air travelers; flights in such regions will be by automatic control.

Great air lines will ply the skies over the seven seas, serviced by great dirigibles and amphibian planes capable of carrying many passengers. In all probability great floating landing fields will be anchored in mid-ocean, fitted with hotel and hangar accommodations for many persons and aircraft. The use of these landing fields, for which at least one patent has been granted, will have to be by consent of the nations of the world, as their anchorage will be in international waters.

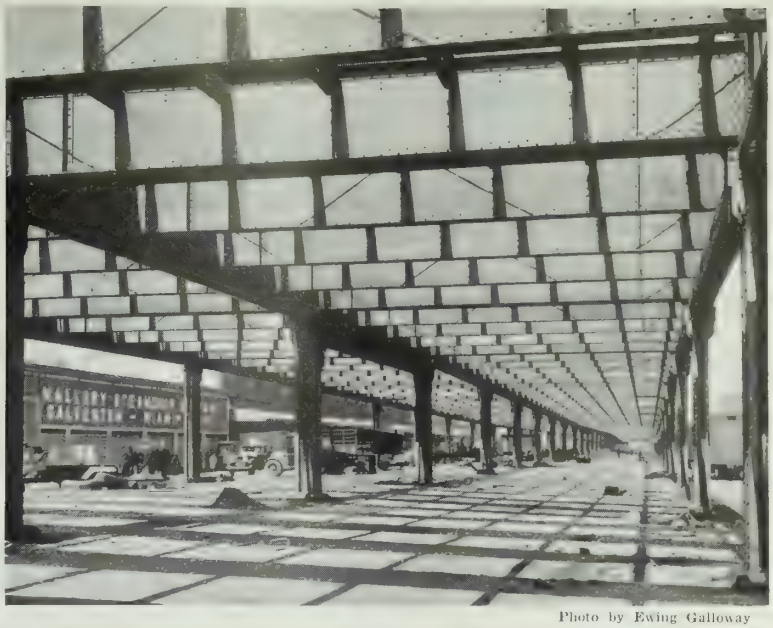


Photo by Ewing Galloway

Elevated Streets Are Beginning to Appear. This 60-Foot Viaduct, 4½ Miles Long, Connects Lower New York City With Riverside Drive at Seventy-second Street; the West Street Section Is Shown. Cost $16,000,000. To be Finished in Two Years.

Mr. Smith Goes to Madrid

The International Railway Congress at Madrid, to be in session from May 5 to 15, is to be the quinquennial gathering of railroad men from every part of the world for ten days' discussion of the innumerable problems having to do with the chief form of transportation. Additional importance is given the occasion by the presence also of the great leaders in the industries producing the materials of which this transportation is made, an opportunity for men to profit by the experiences of others engaged in an enterprise still but little more than 100 years old, and now, more than ever, the greatest influence in any land for development and progress.

So important is the congress that the federal governments, in all countries as well as in the United States, regularly appoint delegates to represent them. For the present meeting, the state department at Washington selected Harold A. Smith, president of the Transportation Publishing Co., to represent it, with two or three others, throughout the period. Mr. Smith, accompanied by Mrs. Smith, left Los Angeles April 22 on a T.A.T.-Maddux plane for New York, whence they sailed three days later on the Cunard Liner Carmania. They will return early in June in time to attend the A.R.A. convention at Atlantic City. Mr. Smith was a delegate in the congress at London in 1925 when he was president of the Railway Review at Chicago.

★ *The major fields of the Edison Battery are railway car lighting, railway signaling, multiple-unit control, gas-electric rail cars, and battery-propelled trucks, tractors and locomotives. Edison Batteries are not sold or recommended for automobile starting.*

The greater the need for storage battery dependability, the wider the margin of Edison leadership ▲ ▲ ▲ In all their major fields,★ taken together, more Edison Batteries are in use than any other kind ▲ ▲ ▲ But in multiple unit control, on electrified roads, subways, and elevated lines, where batteries *must* be dependable, more Edisons are in use than all others combined ▲ ▲ ▲ Edison Storage Battery Company ▲ ▲ ▲ Orange, N. J. ▲ ▲ ▲ Branches in Principal Cities. ▲ ▲ ▲

Edison

NOT SO LONG ago, on a multiple-unit car, the reverse-current relay did not open between the storage battery and the motor-generator used for charging.

▲

The battery discharged through the motor-generator and reversed its polarity.

▲

Subsequently, the motor-generator gave the battery a prolonged charge *in the wrong direction.*

▲

When this was discovered, and the polarity corrected, the battery was merely recharged.

▲

It may seem almost incredible, but the battery was not destroyed; it was not even injured.

▲

It was an Edison Battery.

Storage Batteries

C. N. R.'s New Fast Schedule

THE CANADIAN National Railways announce a new fast schedule on international passenger runs which places the system up in the forefront as operators of fast trains. The International Limited, operating on the new schedule, covers the 334-mile run between Montreal and Toronto in 360 minutes. It will reach Chicago, 848.04 miles, in 18 hours and 15 minutes, a reduction of four hours off the former schedule.

Powerful locomotives and new all-steel passenger equipment have been adopted in the new service, as the result of insistent demand on the part of business interests in Chicago, Montreal and Toronto, for quicker communication over this important line. The C. N. R. also has established speedier service on other international lines. Two fast daily trains are announced between Montreal and Detroit, and three daily trains in each direction between Montreal and Buffalo. Detroit-Montreal schedules are reduced by two hours and fifteen minutes. A speeding up of the time of the New Yorker, New York-Chicago train, by three hours and thirty minutes, introduces a new fast service in response to demand for faster passenger trains.

The 17

No writer of whom we have known anything up to the present ever has succeeded in his efforts to produce a story of sustained interest by ascribing personality to a locomotive or to any other inanimate thing. Men who write tales of that kind doubtless are inspired by the continued popularity of such an old-timer as Black Beauty. While there is no more likelihood of a horse's talking than of a locomotive's doing it, most of us know that men long accustomed to handling either very often ascribe to it—the horse or the engine—a personality satisfactory to themselves if to no one else. No one ever heard an engineman refer to his locomotive as "it," and this is just as true of horsemen and their favorites.

Without any precedent to guide us we do not hesitate to say that in his book, "The 17," published by himself, Edwin C. Washburn has produced a really interesting volume, particularly for men in the mechanical department, and generally for railroaders in all departments. Mr. Washburn, assistant to the president of the Baltimore & Ohio at New York, has had long experience in railroad work. He understands engines, knows what strange things they do sometimes, how temperamental they are, and how, upon occasion, they froth at the mouth and sulk all over the division just when their best efforts are demanded. Mr. Washburn speaks engine-language fluently, but in his interesting book has shown fine restraint whenever necessary. He does not permit the 17 to do all the talking. Here and there the crew has a chance. All in all, the book is very well worth reading, worth keeping within reach, a good reference volume if you like to see the old-time engines, or read of their history. The author has several other good stories to his credit, an assurance that his literary workmanship is by no means to be overlooked. You ought to read "The 17."

—P. R. R. Photo

President Scandrett of the Milwaukee Road Cutting a Piece of Cake for John M. Horan, 92, Engineer, Who Began Working for That Line in April, 1855.

Once More, the Whistle

MR. EDITOR:

On the Central of New Jersey certain new passenger trains are known to all the people along the line by distinctive locomotive whistles. This item of recent railroad news is full of suggestion. Everyone recalls the stories of locomotive enginemen who have used the steam whistle to communicate with a wife or sweetheart as they passed the home; why not musical whistles, by which a train can pay its compliments to the different cities along the line? When a city does the railroad some particularly good turn, the engineman could respond with extra efforts on his chimes.

Or, Mr. Editor, if you do not want anything so fantastic as that, you might propose that different trains or different roads start a competition to see which can give the people the most tasteful and artistic whistling. It is pleasing to know that the Central of New Jersey has a variety of whistles, but how about variety in whistling? In this part of the country, and in most other parts, I think, the varied kinds of unpleasant, not to say outrageous, screechings emitted by the locomotive whistles constitute one of the everyday annoyances that must be endured by people of musical taste. Since some of the western roads have adopted the barbarous custom of blowing the whistle for a half mile, more or less, approaching crossings, our American railroad whistling practice has degenerated into a constant nuisance.

Being devoted to the interest of all the people, you could not do a finer thing than to offer prizes to locomotive runners for skill and proficiency, in treating the public, the people who live near the railroad and must hear all the whistling, whether they like it or not, to tasteful, sensible and *minimum* whistling.

Superintendents of all large roads are pestered more or less by people who complain of unreasonable noise. Here is a chance to start an improvement.

With all the annoying, unnecessary and raucous noises, I have in mind one particular train which is a shining exception to the general run. The man who sounds the whistle on this train knows the difference between one second and three seconds, and he always sounds the two long and two short blasts exactly right. He makes the four sounds in about three seconds. He repeats the signal when repetition seems necessary, and he does *not* prolong the sounds just to please the railroad lawyer. The railroad attorney is a nuisance who is thinking always of the possible future damage suit, in which some unprincipled lawyer will bring a hundred witnesses, so-called, who aver that they did not hear any whistle blown. A railroad attorney ought to be big enough to have some little sympathy for the women, invalids and other innocent citizens who have to suffer for the benefit of the thoughtless or drunken auto drivers who must be scared by the whistle because they think they own the earth, and are so fatuous as to use that part of the earth which carries a railroad crossing, just the same as if it were a quiet meadow in the midst of a 40-acre farm!

M. H. AVERY.

Washington, D. C.

As To Disabled Employe

If an employe, to whom compensation has been awarded for total disability becomes able to do light work of a selective character, but finds it impossible to obtain work which he is able to do, from a practical standpoint the employe's entire earning power has been lost by reason of the injuries he sustained, the Pennsylvania state workmen's compensation board held recently in affirming a modified award for total disability in the claim of Ignatz Szymcsak vs. National Mining Co.

The Sportsman Train De Luxe on the C. & O.

The Sportsman, Under Way, in the Blue Ridge Mountains of Virginia.

By Charles Dillon

HAVING SET thê pace in acquiring railroads and moulding them into systems, the Van Sweringens have stepped out and assumed a leadership in the effort to hold and bring back passenger traffic to the railroads.

The latest exploit, combining principles of modern salesmanship with some of the elements of showmanship, a little spectacular perhaps, but effective nevertheless, has been built around a ten-day preliminary exhibition tour of the Sportsman, a new Chesapeake & Ohio lines de luxe train opening a new route of travel from Detroit to Toledo, Columbus, White Sulphur Springs, Virginia Hot Springs, Huntington and Charleston, West Virginia, and on to the South Atlantic seaboard at Hampton Roads by way of the Virginia cities, Charlottesville, Richmond, Newport News, Old Point Comfort and Norfolk. This they were able to do by opening their new Chesapeake and Hocking line, which connects the Chesapeake & Ohio and the Hocking Valley, to passenger traffic. In doing it they shortened the train time between terminal points about seven hours, and provided through train and car services where none existed before.

Exhibitions of de luxe trains are no novelty in railroading, but the Van Sweringens have improved upon the idea in several ways. A year ago, in the course of their rehabilitation of the Erie Railroad, J. J. Bernet, their chief operating officer, then president of that road, decided to have a 24-hour passenger train between New York and Chicago. Carrying out his plans he designed club lounge cars for coach passengers, requiring no Pullman fare, and installed radio and all the fixings which have become standard on high class passenger trains.

Mr. Bernet figured that none of the communities on the Erie really would believe the road had such a fine passenger train unless they saw it. Going on the principle that seeing is believing, he sent the Erie Limited on an exhibition tour of 51 communities for 21 days. One hundred thousand and sixty-eight persons "came down to the depot to see the train come in," passed through it, and went away to spread the news that the old Erie had a passenger train as fine as anybody's. The Erie Limited became, at once, the most profitable passenger train on the railroad.

Other railroads that had been watching the Van Sweringen experiment and marvelling at the results, followed it with demonstrations of a similar character, but in none of them did they attempt such an extensive program. They were, however, successful so far as they went.

When the Van Sweringens transferred Bernet to the presidency of the Chesapeake & Ohio, Hocking Valley and Pere Marquette, which the Interstate Commerce Commission had permitted them to bring together as a step in making their lines into a system, Bernet began at once turning his attention to passenger service, and conceived the idea of putting on the Sportsman to open a new territory which hitherto had been served only by a roundabout route.

He determined to make the exhibition tour the occasion for a distinct forward step in the battle with the private automobiles and the buses, by doing something entirely new for coach passengers. Bucket type seats, he passed by at once as having become *passe*. He designed an entirely new type of coach, ruthlessly sacrificed seating capacity, cutting it from 72 to 45, and devoted the space to comforts and conveniences. An entirely new type of seat, just put on the market by the American Car & Foundry Co., was selected. These were arranged in pairs on one side of the aisle and singly on the other, leaving an aisle 30 inches in width. The seats swing, facing each other or turning to the windows, are upholstered in fine

The Salon Car, Replacing the Coach on the Chesapeake & Ohio's New Train, the Sportsman: No Pullman Fare.

quality of plush, have double removable cushions, backs tilted to an angle of 22 degrees, in many respects the equal of a Pullman chair. The floors were fully covered with the finest quality of velvet carpet with deadening pads underneath; the cars were extra lighted, equipped with ceiling fans, individual drinking cups, hot and cold water, real fabric towels and porcelain lavatory equipment, and leather upholstered furniture in the smoking rooms. The cars were decorated in neutral tones of gray with the colors ranging from a dark gray at the sills to a very light shade on the deck.

For dining equipment, Mr. Bernet selected an entirely new type of car and had it built by the Pullman Car & Mfg. Co. It is called the club-restaurant car. One-half is used as a club room equipped with deeply upholstered club chairs, sofas, reading tables and lamp, and portable ash receivers for smokers. After dinner coffee is served there from the dining room adjoining.

The dining room seats 24 persons and was designed to give the atmosphere of a high class restaurant, rather than that of a dining car. The familiar type of dining car chair, of mahogany and black leather was discarded, and the tables were equipped with the same kind of chairs used in the Ritz-Carlton restaurant in New York. They are of a modestly modernistic design, lacquered in gold, striped with black, and upholstered in three colors of fine leather. Among the 24 chairs in the dining room, eight are upholstered in a brilliant shade of red, eight in a striking blue, and eight in a soft gold. The colors are scattered among the tables.

The latest type of Pullman equipment was secured with a view to ample drawing room and compartment spaces, and at the end of the train was placed an eight-compartment observation car with all compartments connecting and susceptible of being used *en suite*. Combination radio and phonograph equipment was installed in the observation lounge, equipped with newly designed filters to eliminate train noises and roadside interference, and this, it is a pleasure to say, performed perfectly under all conditions with the Sportsman running through a mountainous country of coal and mineral deposits at any speed. In the make up of the new train the club room of the restaurant car is placed next to the first Pullman, and as the observation lounge is at the end, two places are thus provided for lounging, where magazines, newspapers, sporting bulletins in season and stock market reports are available.

The Sportsman began its exhibition tour at Detroit, on March 17 and concluded it at Williamsburg, Va., March 27, having stopped at 21 places for various lengths of time ranging from two hours, to all day and all evening. By actual count 103,816 persons passed through the train, setting a new high record for that sort of thing. Of that number more than 50,000 visited the cab of the locomotive where officers of the mechanical department were kept constantly on duty to explain its mysteries.

Public approval of the new coach equipment was so definitely expressed that before the exhibition had been concluded President Bernet placed an order for 67 more cars of the same design to be used on the other principal through line trains of the Chesapeake & Ohio lines, particularly on the Virginian, the Kentuckian and the F.F.V.; on Hocking Valley trains between Columbus and Toledo, and on the Pere Marquette in the Detroit-Grand Rapids service. The order totals $2,900,000 and is divided among the Pullman Car & Mfg. Co., the Standard Steel Car Co., the American Car & Foundry Co. and the St. Louis Car Co.

And Here We Have the Ideal, Comfortable Smoking Car for Coach Passengers. Genuine Leather Seats. Looks As If a Man Would Have to Keep His Feet on the Floor.

The Air Ferry "Santa Clara" at Vallejo, Cal., on the First Voyage Over San Francisco Bay District.

The Air Ferries Win Popularity

In Two Months 20,000 Persons Paid $1.50, San Francisco to Oakland, for Six-Minute Ride

By King H. Grayson & W. H. Rosser

More than 20,000 passengers in the first two months' operation indicates public approval of San Francisco's aerial ferries between that city and Oakland. And that is the record, according to the report of the president of the owning company, Joseph J. Tynan, Jr. The fare between the two bay cities is $1.50 each way. Six or seven minutes for the trip.

Air Ferries, Limited, was organized January 1, and a month later the first of its flying boats, the "California", started its daily schedules between Oakland and San Francisco. The "St. Mary's", a sister ship, departed from the opposite shore, and the speediest, and yet shortest distance flying route came into existence. From its inception the public has shown its approval, with a constantly growing patronage. In fact, so hearty has been the approval that a second route, with two more ships, the "Stanford" and the "Santa Clara", now in operation, has been established between San Francisco and Vallejo.

An investment of $120,000 has been made in the four amphibians for this service. The planes are Keystone-Loening, with single Hornet motors and tri-bladed propellers, each with a carrying capacity of seven. The four planes have two licensed pilots in charge on all trips, so that at present there are 14 pilots on the company's staff.

Patronage for the Air Ferries, Limited, has already so confirmed the value of the services that Mr. Tynan and his associates are preparing to put buses into operation at the Oakland terminal in the near future to provide additional traffic speed from the heart of the city to the planes. This same convenience will follow in San Francisco when their patronage demand justifies it. The present patrons, taken from the first two months' operations, are divided between 50 per cent regular customers, and 50 per cent persons making the trips for the novelty or for sight-seeing purposes. The regular customers consist of business men to whom the saving of time is vital, and to whom the air ferry piers are now an accepted permanent institution. With the exception of a few days' operations, the 20,000 passengers carried have been either from San Francisco to Oakland, or vice versa, at a fare of $1.50 each way. Thus far the line from San Francisco to Vallejo seems likely quickly to duplicate that between the other points.

In the near future Air Ferries, Limited, will put additional ships into operation between San Francisco and Sausalito, Stockton and Sacramento, and eventually between San Francisco and Santa Cruz.

At present, using ordinary transportation, it requires about one and three quarters hours for a round trip between the two leading bay cities. Air Ferries, Limited, makes the trip in 15 minutes. Passengers may take the first flying boats from either terminal at 7:50 a.m. and every 20 minutes until 11:30 a.m. At 12 o'clock noon the service is increased and from that hour planes depart every 15 minutes, the last departing from each terminal at sunset or about 5:50 p.m. The crossing time is six minutes which means saving hours in the course of a day to the business man, or to the housewife who wishes to shop in San Francisco. This serv-

One of the New Air Ferries Flying Over Oakland.

ice is maintained six days in the week, with only a slight change on Sundays when the ships start service an hour later in the morning.

The difference in cost of the two forms of transportation seems to assure the continuance of the larger ships of the water. It is evident that those who patronize the air ferries undoubtedly are business men who appreciate the time saving, or those who enjoy seeing the sights from the air. Investment and operating costs will mitigate against much of a reduction in the air rates, but the patronage is equally certain of growing among these two groups who have shown their interest.

As in other places, men to whom speed is important will use the airships. Persons using the river steamer for Sacramento must spend 12 hours on the trip. When the Air Ferries, Limited, have their ships in operation to that city, passengers may make the same trip in 50 minutes.

It's Hard To Beat the Dutch

By King Hamilton Grayson

America is in keen competition with Europe and the rest of the world for commercial supremacy in all things aerial, but while this has been going on over here not many have become familiar with the progress of the oldest aerial navigation company in the world, the "K. L. M. Royal Dutch Air Lines."

"K. L. M. Royal Dutch Air Lines" was founded in 1919 by the greatest bankers, shipping and commercial firms in Holland, and since that date, has won an enviable place in international air traffic. Service is now maintained daily between Rotterdam, Amsterdam, and London, Hamburg, Copenhagen, and across the Channel to Malmo, Sweden. Other daily service is maintained between Amsterdam, Rotterdam, Brussels and Basle-Zurich, with constant service between the two leading cities of Holland.

In addition to the recognized safety and reliability of the K. L. M. Royal Dutch air service, this company has earned considerable fame through the many long-distance world-wide flights it has sponsored. Among its unique services were the original tourist trips by air created first by K.L.M. These now include tourist service to the East Indies, to Africa, and to Japan in special chartered planes. In connection with these tours and their general service the Royal Dutch air service maintains its own organization in foreign lands. Standardization of all equipment, service and details has been one of the winning factors since the conception of the company, and this class of service is equal on all of their lines, either national or international. Fokker planes are used exclusively, with single, twin or triple motors.

The Royal Dutch Lines established in 1929, a system of monthly return trips between Netherlands and the colonies. This was to encourage greater air travel and closer contact between commercial representatives and their home offices. The saving of time won the commercial public immediately as it meant a saving of 16 days of travel time. During 1930 all of the landing fields in the service will be so improved that the time between Holland and Batavia in Java, will be reduced to six days. All of this development has been accomplished by the Royal Dutch Air Lines with the smallest subsidy of any aerial navigation company in the world. Comparative records also show K.L.M. to be the most economically operated and the most successful commercial air transportation company how handling this class of travel and traffic. From its inception the company has been kept strictly out of politics, and strictly down to commercial air transportation business.

In close harmony and cooperation with the K.L.M. Royal Dutch Air Lines are those of the Royal Dutch East Indies Air Lines, or as they are officially known in Holland, the Koninkijke - Nederlandschindische Leuchtvaart-Maatschappij. When a native of Holland asks whether you have enjoyed the famous Dutch East Indies air service, he asks about the company in its official name. The difficult pronunciation of the name does not signify difficulties in service, for the East Indies company is equally up-to-date in every respect with its company in Holland.

The Dutch East Indies is a widely scattered island empire. The major part consists of the Malay Archipelago, with enormous distances between the various islands, and with a tremendous loss of valuable time in traveling by boat or train. The creation of the air service was one of the greatest steps made in advance in the Far East. The line was founded in 1927, and the first service was started in November of 1928, working in close harmony with K.L.M. The first operations were confined to the Island of Java, where they used trimotored Fokker monoplanes. This

was soon followed by daily services between Batavia, Semarang, Sourabaya, and Bandoeng. The service was extended in 1929 to include Sumatra, Singapore, Medan and Sabang. So rapidly did the service grow in popularity that it taxed the company to the limit to keep pace with it. The next stage of development, this year, will show complete services daily between Java, Borneo, and Celebes.

The traveling time by rail from Batavia to Sourabaya is 26 hours, with a stop of one night being enforced at a hotel. Business men leaving Batavia on Monday for a commercial trip could not return by Saturday and accomplish much in the way of sales. The air service has changed the commercial life of the country, and it is now possible to make a round trip in one day, with a total of six hours of flying time. Atmospheric conditions in the East Indies are ideal for air travel as the upper air is always calm and cool, and those using the service have commented on the great saving in nerves, disposition, and time, and of the pleasure now gained from the trip between Java's two most important cities.

Courtesy of Fokker Airplane Co.

Fokker, F-32, Over Lower New York Just Before Starting for the Pacific Coast to Go Into Passenger Service Between Los Angeles and San Francisco. This Ship Carries 32 Passengers, and Has Sleeping Berths for 16.

The First Air Ride

The problem of the commercial air transport companies in getting people to ride is to get them into the air the first time. This fact was revealed by a recent questionnaire submitted by the Boeing System. Among other things, the replies indicated that air passengers are much surprised, after their first ride, at the absence of the expected thrill, but they are impressed with the time saving. In questioning business men on their attitude toward air travel, the Boeing System found that 30 per cent of the men interviewed had taken airplane trips either on regular scheduled flights or sightseeing. Only 10 per cent indicated they were not interested in air transport as a possible means of regular travel. Another check of 600 men who had made flights showed that all but 20 answered "Yes" to the question, "Do you enjoy flying?"

American Airways Traffic Grows

A new record for the number of air passengers carried in a single month was made in March by the lines of American Airways, Inc., operating company of the Aviation Corporation. During the month, 6,192 passengers were carried on the company's lines, 19.5 per cent more than in February, which reflected the increase in travel with the coming of more favorable spring weather, and the growing interest of the public in the faster means of transportation at low rates. American Airways, Inc., operates the largest system of air lines in the United States, its passenger, mail and express planes flying approximately 20,000 miles daily over more than 7,000 miles of airways. During March passenger planes flew 312,439 miles over the air passenger routes operated by the company, including the New York-Boston service operated by the Colonial division; the line from Cleveland to Dallas via Chicago, St. Louis and Kansas City, operated by the Universal and Southern Air Transport divisions, and the Dallas-El Paso route operated by the Southern division.

The Big Fokker Planes

It required 6,670 gallons of gasoline to bring to the Pacific Coast from New York the Fokker F-32 passenger planes now in service between Los Angeles and San Francisco, according to the Richfield Oil Co.

Each of the huge liners averaged about 115 gallons of fuel an hour. Their total flying time was approximately 29 hours. The planes made an average speed of 110 miles an hour. Their total mileage was 2980 apiece.

At the various airports where the planes stopped for refueling, officials estimate a total of 300,000 persons viewed the ships and approximately 2000 persons enjoyed short hops.

The new ships, largest land planes in the world for passenger service, are equipped with four compartments, each with eight deeply cushioned chairs, arranged with an aisle between them as in Pullman coaches. The cockpit for the two pilots is situated high in the nose of the ship. In the center, between the four aft compartments and the forward ones, is the steward's buffet and compartment.

Individual dressing rooms for men and women are in the fuselage aft of the exit and entrance doors which, unlike other big planes, open on either side. Each compartment is individually designed with a special color scheme and wall decoration.

The planes are powered with four huge engines apiece, set in tandem so that each plane has two puller and two pusher propellers.

"Many misguided persons think the true test of friendship is whether the friend will lend money."—*John D. Rockefeller, Jr.*

Some Queer Things in the News

Human Interest Items About Men and Women in the Public Prints

A MAN catcher attached to the front of motor vehicles is the latest device tested by the London ministry of transport in an effort to reduce the growing toll of fatal street accidents in Great Britain. Deaths average fifteen a day.

The new lifeguard is fitted to cover the front wheels of cars, much like a cow-catcher on a train, and is designed to carry the car's victim along the road. Each crossbar of the guard is fitted with a sponge-like material, and at the bottom a rubber fender prevents legs or arms from getting under the wheels.

Tests by the ministry of transport included long hours with a dummy figure that was thrown into the path of a fast moving one-ton truck from all conceivable angles. The dummy was not once run over.

He Scolded the King

King Boris of Bulgaria, wearing overalls and driving the crack Varna express train, arrived at Pleven two minutes late, and received a harsh bawling out from the divisional superintendent, who failed to recognize the royal engineer.

The king signed the regular driver's report, and patiently explained his difficulties. Then the superintendent discovered his identity. Boris then mounted the cab and drove the express to Varna within the scheduled hour's time.

Couldn't See His Way

Wabash passenger train No. 3 lost 35 minutes one day not long ago because the engineer, D. W. McGinnis, lost his spectacles. The things slipped off the man's ears while running between Pattonsburg and Jameson, Mo. McGinnis thought he knew just where they had fallen, but he didn't, apparently. The train was stopped and the engine crew dismounted. Soon the remainder of the crew joined the search and finally passengers alighted to augment the forces. While the hunters were searching in the snow along the right of way, railroad officials at Pattonsburg became worried about their lost train and sent employes to find it.

After the search proved vain the engineer decided to leave his spectacles until some future date and took his train into the next station, 35 minutes late.

A Big Day for Anchorage, Ky.

Anchorage, Ky., has one big day a year, the Wednesday after the first Monday in April, when the annual meeting of the Southern Pacific Co. is held. The town, nor far from Louisville, is somewhat dependent on the railroad for its livelihood. Taxes paid by the road have given it one of the finest school buildings in the section for a town of its size, with modern equipment and a fine athletic field. Its citizens benefit in other ways, as the tax rate is comparatively low, due to the large payments made by the road.

His Wonderful Night

A short time ago William H. Byars came from his home in the Tennessee hill country to Atlanta and Emory University to finish an education he had started well in the mountain schools of the neighbor state, says the Atlanta Constitution.

Before coming to Atlanta he had never ridden a train, a street car or an elevator. Of the former he had seen many thundering their way through the mountains and they had captivated him.

So a few nights ago young Byars was drawn to an enginehouse to inspect the locomotives. So struck by the magnitude and workings of these gigantic iron horses did he become that when the hostlers shut the doors and closed up the barn for the night he failed to note them. And as a result he spent the night with his new found friends.

The next morning when the engine crews arrived they liberated young Byars and he returned to his lodgings at Emory for some sleep.

But Don't Stay Inside

Swarms of big rats in his barn-garage made life a burden for R. B. Rushing of Augusta, Maine, until, one day, he read something in a National Safety Council bulletin about the deadly monoxide gas. Nothing ever had discouraged the rats. Finally Rushing sealed every hole in the building with the exception of one large opening. Into this aperture he placed one end of a rubber hose, the other end he tied over the exhaust of the family Ford. Then he closed the windows and door and turned on the engine, stepping outside, of course, before starting the death dealer. After 20 minutes he opened the barn and stopped the engine. Not a squeak did he hear, and since that time he has not seen or heard a rat!

A Fine Safety Record

According to Isaiah Hale, safety superintendent of the Santa Fe System Lines, a total of 144 employes were killed on that road in 1911, compared with 40 in 1929, a net saving of 104 lives. This was accomplished in the face of an increase in business of 42 per cent. Forty-six employes were killed in 1928, the showing for last year being the best on record.

The Picture on the Cover

When you learn that the picture on the cover, this month, is the work of a yard clerk employed by the Norfolk & Western Ry., at Portsmouth, Ohio, you are almost certain to exclaim, "Well, for goodness' sake, what's he doing on a railroad?" Which shows you don't know much about the poor reward given the average artist for the beautiful things he produces after years of training. A. M. Tidd is the artist in this instance and, as the drawing shows, he is a painstaking workman in black and white. In this picture he has shown something that meets his eyes every time he leaves his office, or every time the limited train passes the steel works at Portsmouth. The drawing was used originally on the Norfolk & Western Employes' Magazine, a few months ago, and is reproduced through the courtesy of that publication and the artist.

Editorial Comment

The Third Year

EDITORS have been acclaimed everywhere for their innate modesty. Indeed, they admit it themselves. Which encourages us, this month, to draw attention, rather shyly, to the fact that the magazine you are now enjoying so hugely, while others in the family wait impatiently, their turn, is the 36th number of *Transportation*. A little careful figuring will show you that we are trying to tell you about our third birthday anniversary.

Some philosophically inclined poet of long ago once said that anniversaries are "blest and distinguished days." In every way this is true of *Transportation*. and of the men who make it. Their product has been welcomed in high places, the work has been rewarded in material ways, and the magazine is going on to even better days and better things. To see it grow and prosper has been a great joy. To know that it has made a place for itself in the offices and homes of thousands gives to its makers the feeling of very genuine satisfaction known only to men who create something new and worth while. The quality mentioned in the first sentence of this brief reminder forbids our saying more.

What All Railroaders Should Know

One doesn't hear so many attacks on the railroads as in former times, thanks to truthful information given the public, but occasionally some uninformed person says silly things about them. We hear it on the air, from radio broadcasters. Once in a while a street-car conversation in the next seat tells us how little some persons really know about these great properties.

Railroad employes are partly responsible for this situation. Few of them know enough about their companies' affairs to set a speaker straight when he makes a misstatement. We have always believed this to be an employe's duty, not only to himself and his family, but to the source of his welfare which is the railroad.

There is always the slim chance that we are wrong, but still we believe that every railroad magazine in the United States should carry at least one column of plain, easily-understood facts about railroads, information such as the public relations bureaus at Chicago and New York are turning out every day. We believe that employes—more than shippers—need this education. In another column we are printing part of an address about railroad taxes. What do you know about them? How do they affect you and every citizen? Take a few moments this evening to study these questions. They affect you and yours. They affect every one of us.

Mechanical Engineering for April

The April issue of Mechanical Engineering, the monthly journal published by the American Society of Mechanical Engineers, was a remarkable and very valuable historical edition commemorating the 50th anniversary of the founding of that distinguished organization. For the members, the April issue of the society's magazine should prove to be a treasure, a fine and constant reminder of the high place achieved by the engineering profession in the life of the human family in every part of the civilized globe. Indeed it would be difficult to name any other scientific class, excepting only the medical profession, which has contributed so much to the comforts, the daily conveniences, and the health and happiness of mankind. Even an enlarged edition of the magazine containing 250 pages of special articles is wholly inadequate in attempting to tell the wonderful story of engineering whether it be mechanical, civil, electrical or mining. To one outside the profession, but still conscious of its important service, the task appears overwhelming.

For editors, printers and illustrators this April number of Mechanical Engineering has the special appeal certain to exist in a product of the craft so excellently prepared. As an outstanding example of careful and intelligent typography and make-up it is as nearly perfect as any of us hope to see.

The Story of the A. C. L.

An attractive and exceedingly valuable little booklet entitled, "The Story of the Atlantic Coast Line, 1830-1930," has been issued by that progressive line through its public relations department. The booklet contains only 20 pages, but within this regrettable limitation the writer has told, with words and pictures, the history of a railroad upon which the whole economic growth of the South has been, and continues to be dependent in a very large degree. It would be difficult to tell a finer story in many times the space given it here. It is hoped to reproduce in *Transportation* the greater part of this little history in an early edition.

Now Watch the N. W. P. Uniforms

Obviously it is impossible for one person to know the rules and regulations of all railroads, but nevertheless we feel safe in using the superlative in speaking about the latest order issued on the progressive Northwestern Pacific Railroad at San Francisco. We do not know of any other line having such an order or rule. Therefore, we declare President Maggard's latest contribution to the joy of passengers the wisest thing yet turned out.

The Northwestern Pacific is going to have its trainmen's uniforms cleaned and pressed at regular intervals, and at its own expense. The order reads:

> The management has arranged a plan whereby the handling of this matter will be made as convenient to trainmen as it possibly can be made. For those living in San Rafael, San Anselmo, and Fairfax there will be a daily house to house pick up and delivery. For those living elsewhere, uniforms may be left in the station master's office at Sausalito. Ordinarily uniforms will be returned the day following that on which they are picked up, thus permitting men on assigned runs to have their uniforms cleaned and pressed on layover days.

In an editorial on this subject, printed last September, this magazine said:

Isn't it about time to have inspectors of uniforms worn by conductors, brakemen, flagmen and porters on passenger trains? All these men earn good wages. They should not be allowed to wear the same old uniforms year in and year out. If they can't appear for duty shaved, shined and brushed, they ought to be put on way freight and kept there.

The idea should be talked about all over the country. It would be a fine suggestion to circulate among street car, bus, and electric railway crews. They, as in the case of steam railway trainmen, receive good pay, but some of them, not a thousand miles from this window, are wearing uniforms that haven't been repaired, cleaned or pressed since the World War. If these men can't afford to have a tailor care for their uniforms then such work ought to be done at home.

One of the best pictures this magazine ever published showed a brakeman mending his trousers. That brakeman is now president of the Missouri Pacific Railway. The slovenly, unkempt trainman or bus employe is an affront to the public.

Plan to Stabilize Labor

With a view to stabilizing the forces of the Southern Pacific Company in spite of seasonal fluctuations in transportation business, Paul Shoup, president of the railroad, has announced a novel "employment clearing house" system. In explaining the innovation, President Shoup said:

"On our Pacific Lines which serve west of the Rocky Mountains a half dozen states, we have over 9,000 miles of railroad and normally employ more than 60,000 people. Just as the different sections we serve vary in climate and season, so the peak need for transportation moves in different parts of this wide territory and one peak does not ordinarily match another. Likewise our maintenance and improvement program is responsive to the needs of the different sections concerned and this varies greatly and necessarily without being responsive to any local employment situation.

"It is our policy to give the largest possible proportion of our employes permanent employment, but around this permanent structure of our personnel is a fringe of temporary employment which varies responsively to the conditions I have named. In addition, the variations in crops and industrial activity, regardless of seasons, have a direct effect upon the tonnage of freight to be moved and therefore upon employment in transportation. By the plan now being perfected involving the full cooperation of all of our various departments, employes temporarily laid off in one occupation will with the free transportation we are permitted to provide have greater opportunity than ever before to find work in our employ elsewhere. Thus we expect to reduce to a minimum the number of employes whose places on the payroll have been more or less irregular, especially those who have come to us very recently. It cannot be expected to be 100 per cent effective but we are certain of good results."

Avery Turner's Anniversary

We find very genuine pleasure, this month, in congratulating the management of the Santa Fe System on the fact that, for 55 years it has had the valuable services of that sterling young railroader, Avery Turner of Amarillo. With equal sincerity we felicitate Mr. Turner whose long connection with the Santa Fe has been a satisfying experience. From the first day to the present he has occupied creditably to himself and the company practically every position ordinary, supervisory and executive—55 years of faithful service. May he continue actively and energetically to discharge for many years to come the important duties assigned him as land and tax commissioner.

The 55th anniversary of Mr. Turner's service on the Santa Fe will be observed May 25 by his many loyal friends. These friends refer to him affectionately as the Grand Old Man of the Santa Fe, a form of endearment to which we do not subscribe. We do not count a man's years, said Emerson, until he has nothing else to count. You can never say this of Avery Turner. He is one of the Santa Fe's busiest men.

Free Speech

In one of the hearings before the senate committee on interstate commerce, early in April, it was said that some time prior to the hearing before the Interstate Commerce Commission with respect to the proposed consolidation of the Great Northern and the Northern Pacific, the Northern Pacific issued a bulletin forbidding employes to discuss the proposed merger. We have not seen this order, but if it actually was issued it will seem very much like the assumption of a power expressly denied to congress itself in the First Amendment to the Constitution.

Loyalty can never be created among men by any such means. The attitude of the people toward free speech and a free press in 1787 has never changed. The surest way to wreck employe morale is to attempt to control men's tongues and pencils. It can't be done—safely.

The Tragedy of Taxes

Four hundred million dollars is quite a lot of money. It is, indeed, an amount far beyond human comprehension. Because the brain can take in and assimilate only just so much of the worth-while information available to wide-awake persons this staggering sum has been brought down to more understandable levels by C. D. Morris, assistant to the chairman of the Western Railway's Committee on Public Relations at Chicago. Speaking, recently, to the Rotary Club of some town in Wisconsin—and he must have thought of Daniel in the lions' den, up in that region—Mr. Morris said railroad taxes in 1929, for the first time in history, had passed the 400 million mark.

"This," said the speaker, "was an average of more than $1,665 for every mile of line in operation last year. It is $1,103,000 for every day in the year. It illustrates the enormous drain the support of government has come to be upon one of the major industries of the country.

"It will not do for the average citizen to say, 'this tax burden is the problem of the railroads in which I am in no wise concerned.' Every increase in railroad taxation inevitably adds to the cost of transportation, which cost always is paid by the ultimate consumer. The retail merchant who pays the freight bill, adds the amount thereof to the wholesale price of his merchandise and fixes his retail selling price in accordance therewith, so that whether you are

buying a loaf of bread, a ton of coal or a suit of clothes you are helping to pay the nation's freight bill.

"Out of every one-hundred dollars paid to the railroads of the country last year for transportation service, $6.34 was immediately turned over to the different subdivisions of government in the way of taxes, which was approximately double the ratio paid thirty years ago. To put it in another way, it may be said that the railroads turned over to the government in the way of taxes last year the entire gross revenue received for the transportation of 200 million tons of freight or from 360 million passengers.

"Ten years after the war came to an end our aggregate governmental expense has not decreased. Our federal taxes have, of course, decreased but state and local taxes have increased more rapidly than federal taxes have declined."

To the Readers

Why do makers of draft gears, bearings, automatic connectors, locomotive boosters, stokers, valve pilots, and other devices, spend their money for advertising in *Transportation?* In an effort to build their business, of course. They have a very real message for the readers of *Transportation.* They are trying to help railway men to solve the many problems having to do with constantly increasing efficiency and economy in operation. Investigation shows that a large percentage of such advertised products are widely used by the railways.

A gratifying number of railway officials have written to manufacturers referring to their advertisements in *Transportation,* asking for prices or for more information, and for this we thank them. Business has resulted for the advertiser, and service and satisfaction for the inquirer. This helps all of us. It benefits the reader and his railroad. It benefits the advertiser, and it helps *Transportation's* business to grow.

We are all trying to render a real service in our work, advertisers as well as publishers. Evidence that shows we are doing it is real cooperation on the part of our reader-friends which we appreciate. It shows the advertiser that his money is well spent.

If an advertisement interests you, write the advertiser specifically telling him where you saw it.

New York State's Generosity

That was a fine, big-minded, unselfish suggestion, made a few weeks ago by Major General Lytle Brown, that the secretary of war be authorized to accept from New York state the Erie and the Oswego canals. Reading the report of Major General Brown to Chairman Dempsey of the house committee on rivers and harbors, we discover that New York state favors government ownership, at least with respect to these two ailing elephants.

Ordinarily one might expect the New Yorkers to nick the federal bank roll for a large amount in payment for these waterways, on which, Major General Brown says, the state has spent nearly $150,000,000. But New York state is patriotic and generous. Not for the world would it think of making the government pay one dollar. Indeed the state not only is willing, but exceedingly eager to give up the whole works for nothing. All the government has to do is take the property and pay for its up-keep and improvement. And this, according to Major General Brown, will amount to only $2,500,000 a year.

To put it briefly and clearly, New York is willing to let all the American people pay for these broken toys. Why? Because "at least one-half the traffic passing through the canals is interstate and foreign commerce." The chances are, too, that the government will take over the canals, probably because it isn't losing enough millions in operating the Mississippi and Warrior River barge lines—at the people's expense. Thomas Edison certainly spoke wisely when he said, "the government never really goes into business, for it never makes ends meet." Where Mr. Edison missed a chance for a good epigram was in failing to add that the government *always* makes both ends meet, but both ends are deficits. At this point nothing better can be done than to quote from a recent address by J. M. Davis, president of the Lackawanna, speaking in New York:

"A fair trial has been given the barge canal. It has cost your taxpayers, I am told, about $230,000,000. Do farmers receive more for products shipped by water between Buffalo and New York than if shipped by rail? Ask them. Does a loaf of bread cost less when the wheat or flour of which it is made is shipped by that canal between the Great Lakes and the Atlantic than when shipped by the Lackawanna? You know the answer as well as I do. Then, who receives the benefit?

"Inland waterway transportation is, of course, a subsidized proposition. However, in arriving at the actual cost of water transportation to the shipper and the actual saving in costs to the consumer, the taxes which go to the construction and maintenance of the waterway must be taken into account. If you do that, in the case of the barge canal, for 1927, for instance, I think you will find that it cost the taxpayers more than $3.50 a ton to float freight, regardless of the length of the haul. And again, that in 1928 it cost the taxpayers of the state between $10,000,000 and $11,000,000 to move the 3,089,998 tons of freight handled.

"Any railroad operating between Buffalo and New York could have accommodated this added amount of traffic through the addition of several average trains daily during the seven or eight months that navigation is possible on the canal. And, if the regular rail rate had been paid for transporting this traffic and the canal abandoned, the taxpayers would have been money in pocket.

"A hundred years ago, undoubtedly, it was cheaper and often, perhaps, quicker to ship by water than by wagon. But, today, is it safe to assume that the relative difference in cost remains the same? In early days, shipping charges added materially to the cost of commodities. Do they today? In those days, waterways were essential to the development of the country. Is that so in 1930?

"The theory of the economy of inland waterway transportation may be all right, but in actual practice the results fail to justify the soundness of the necessary expenditure."

Which, we suggest, shows what fine restraint Mr. Davis displays in speaking to the public. We wonder whether this editorial will be printed before President Loomis of the Lehigh Valley tears into this project with the customary list of casualties.

Little Stories About Big Men

The Warwick of Railroaders

Frederick D. Underwood

FAR BACK in English history, along about fourteen hundred and something, there was a courageous gentleman named Richard Neville, the Earl of Warwick, who distinguished himself mightily in the Wars of the Roses. He was a trustworthy sort of scout who never forgot his friends, especially if they were the kind one likes to help along in the world. A medieval boss was Warwick. Indeed he was called "The Kingmaker," and has come down through the centuries to remind this chronicler of human affairs that his name and title would have fitted perfectly into the life-story of Frederick D. Underwood who used to be president of the Erie. Warwick, it was, who threw Henry VI out of his kingship in 1461, and got the job for Edward IV, only to be pitched out himself, a few years afterward, when Edward turned traitor.

Warwick liked men of ability who understood loyalty, and this trait it is that brings him to mind when we look over the fine record of Frederick Underwood. Devotion to his friends is, perhaps—and always has been—an outstanding characteristic of this veteran railroad executive exceeded only, if at all, by his determination to see to it that everyone gets a square deal.

The late Sir William Van Horne used to tell a story. Van Horne had gone from the Chicago & Alton to the Milwaukee in 1879 to be general superintendent, and as often happens, the boys didn't welcome the outsider in the big job. Indeed they were pretty snooty about it, and there was some insubordination. One day Van Horne met a young clerk, Fred Underwood, and, not suspecting he was, in time to come, to be president of the Erie Railroad, asked him just why he was prejudiced against him.

"Why," exclaimed the clerk, "I'm not prejudiced; and come to think of it, I've no reason at all to be against you."

That was the beginning of the end of the silly feud. It was thoroughly characteristic of Underwood that he should at once begin to talk among the boys about the unfair tactics employed against the new general superintendent. At least Van Horne always gave him credit for starting a better day for him.

Frederick Underwood has helped many a man to make the grade against big odds, and in doing it he has formed enduring friendships. Men always admire the straight, fair shooter. Devotion to his friends seems to be—it always has been—his leading trait, and he has more friends than most men. There is, for instance, Rudyard Kipling; Pat, the old gateman at the crossing out at Wauwatosa, Wisconsin and a little group of millionaires who belong to the exclusive Brook Club in New York City and call themselves "The Pebbles." Then there were several Presidents of the United States, a lot of governors, and the reporter whom he started to throw out of the window from the eighth story one day some years ago, and then took a liking to him. He certainly has a lot of friends.

But you can't get him to talk about himself, and his reticence is no pose. On almost any other subject he is perfectly delightful. He has never believed in making a noise on his own account. When he is asked to tell something about himself, he counters

with the old frog story. Once there was a very wealthy man, Mr. Underwood says, who was fond of frogs' legs. When he ordered that delicacy one day at his favorite restaurant, he was keenly disappointed when told there wasn't a frog in the place. The market had been swept bare. The man called for the proprietor and served notice that there was no shortage in that kind of fare. He had a big swamp of his own where there were a million frogs, he said, and he would contract then and there to deliver a carload of them in a week. The next time he went to his rather Ritzian rendezvous, the owner asked him when the carload of high hoppers would arrive.

"I put a gang of men at work," was the doleful reply, "I had the car all ready, and we got all there were, I guess. There were only six, but they sounded like a million."

Almost secretive is Mr. Underwood, so little will he say or have said about himself, for fear of seeming to be noisy.

He was born in a little village in Wisconsin near which, since his retirement from the presidency of the Erie, he spends his summers on a large farm. He has owned the place for many years. He used to leave his car in the yards whenever he was in Chicago and go up to Wauwatosa, his home town. On one of these visits he noticed that his boyhood chum, the gateman at the railroad crossing, had a battered old watch that kept all kinds of time but the correct one. The next trip Mr. Underwood took Pat the finest gold timepiece obtainable, a repeater, with a movement good enough for the conductor of the Empire State Express.

The man was just about overwhelmed. In looking over the case, however, he saw no inscription. Presentation watches usually come considerably worded in the back, so he asked the donor whether he might not have engraved inside the lid, "Presented to ——— by Mr. Frederick D. Underwood, President, Erie Railroad." Not in a thousand years. No, indeed. Mr. Underwood would not consent. Concerning what he gives he says nothing, and wants nothing said.

If Mr. Underwood would ever consent to their publication, and he never will, his letters, official and private, would be hailed as real literature. Many a professional author would envy his clear and forceful style of writing. Not only did he have a good education to start with, but all his life he has been an admirer and reader of the works of the masters of English. His father was a Baptist clergyman from whom he gained an intimate knowledge of the Bible, as well as of Shakespeare and the classics of the Anglo-Saxon tongue.

Mr. Underwood was graduated from the Wayland Academy at Beaver Dam, Wis., where he distinguished himself for his essays and compositions. He might have developed into a college professor for all anybody knows to the contrary had not Fate interfered. A youth about his own age had agreed to go to work as a clerk for a railroad grain elevator but was unable to take the job. Underwood took it, and there and then his railroad career began. Of course, no one could become a preacher after clerking in a grain elevator. A brakemanship was his next step up, if you look at it that way, but even this couldn't keep the young man from reading good books, and why should it? Making his way through the chairs, as we say in lodge, Underwood remained a keen student of events, of men, measures and methods, a constant reader, as his skill in clear, robust English proves.

Ever since Mr. Underwood read the first novel of Rudyard Kipling, and long ago he had read all of them and some of them several times, he has admired that versatile Englishman. When he was general manager, years ago, of the Soo Lines he named one new station in Michigan "Rudyard" and another "Kipling." Of course, he said nothing to the noted Britisher about it but one of several prominent Canadian railroad executives, intimate friends of Mr. Underwood, evidently did. Shortly afterward, Mr. Underwood received a most appreciative letter from Kipling, and also a bit of a poem from his pen, entitled "The Twin Towns."

Another friendship of Mr. Underwood's which shows his many sided character, was that with Charles S. Osborn, formerly governor of Michigan, who also was a brilliant journalist and scientist of international reputation. They met when Dr. Osborn was the editor and owner of a newspaper at Sault St. Marie and Mr. Underwood was in railroad work in the same locality. Dr. Osborn was the discoverer of the Moose Mountain iron range in Canada; he is also credited with the discovery of the source of the light of the firefly or "lightning bug" and is the only American member of the Madagascar Academy of Sciences. He is an authority on fish and birds and earthquakes, and the author of many technical and popular books. There was nothing which Mr. Underwood enjoyed more than to sit for hours with Dr. Osborn discussing such subjects as the "man eating tree," which his friend had studied while exploring Madagascar, or the seismic disturbances which shook Japan.

However busy Mr. Underwood was in the very peak of his work of making over the Erie, he continued to be an incessant reader of history, biography and science. Often he would appear at the beginning of a hectic day with a book under his arm. He kept close watch on all the reviews, and had his secretary get any volume which attracted his attention.

None can tell a funny story more adroitly than can he. Not only has he a marvelous gift for the right word, but a keen sense of humor. When he took charge of the Erie in 1901, its stock in Wall street, and the rolling stock, too, was in pretty bad shape, as all the world knows. The newspaper columnists and the comic weekly contributors referred to it as the typical railroad whenever they felt like being funny about transportation. Mr. Underwood had clipping agencies collect all these merry quips, and had some of the best ones printed on the booklets and even the time tables of the road. Such hoary jests as babes in arms starting out on the Erie and alighting at their destinations as grandparents were duly recognized, sometimes in the official organ of the road. He anticipated by many years Henry Ford's Joke Book, printed by that canny pioneer in the automobile field as good publicity matter, long before he changed the name and style of Lizzie to Elizabeth.

There is a rather ancient chestnut often told about a supposed meeting between W. H. Truesdale and Mr. Underwood. One of the many versions is that the two were passing down the street one day. This was in the years when the Lackawanna, of which Mr. Truesdale was president, was exploiting the virginal whiteness of its "Phoebe Snow," due to her traveling always on the anthracite road. And as the two executives walked along Mr. Truesdale paused a moment to greet a negro woman who once had been one of his family servants.

"Is that your friend, Phoebe Snow?" Mr. Underwood is said to have inquired. "Looks a bit dark I should say even if she does travel on the Lackawanna."

"She went away on the Lackawanna," Mr. Truesdale replied, "but she came back on the Erie."

Mr. Underwood always denied the legitimacy of this wisecrack. If the

incident had actually taken place he would have been the last person in the world to deny it. He has always been quick to laugh at any good story, even if told at his own expense.

Probably no executive ever had a more retentive memory. He retains the most intimate details regarding railroad material and personnel. Other men may send for folders and files of statistics and lengthy analyses, but he can carry the facts about with him. The president of another railroad was once chiding him about his cocksureness in that respect and told him that there was no better guide for reaching conclusions than statistics.

"Quite so," replied Mr. Underwood, glancing about the room where the portraits of former presidents of the railroad were hung. "It is a fact, for instance, that 12½ per cent of the presidents of your railroad commit suicide."

It was true that one of the eight men whose pictures appeared had taken his own life, therefore the percentage was correct as given.

At the age of 80 Mr. Underwood has a memory as tenacious for the events of today as for all his busy yesterdays which filled six decades of railroading. He can tell offhand the names of men in train crews with whom he worked as a young brakeman, or recall subordinates who were under him in the various positions he has occupied. Often veterans of the rail who get into disputes as to who was who in a certain year, or whether or not "Jim" or "Bill" was on the same run possibly 50 years ago will write to Mr. Underwood for exact information. His answer is final in settling all wagers made on such matters.

One of the reasons why his memory is so good is that he is sincerely interested in his fellow men. He may well be called a dean of the railway world, because under him so many brilliant executives have developed. When he was general manager of the B. & O. in 1899-1901, for instance, Daniel Willard, now its president, was his assistant and went with him to the Erie in the same capacity and became general manager. William J. Harahan, formerly president of the C. & O., was a lieutenant of Mr. Underwood's and also his first assistant on the Erie for a time. Mr. Underwood has an unusually large acquaintanceship among railroad men both in the United States and Canada. Among those distinguished in the Dominion, whom he knew well in his younger days, were Sir Thomas Shaugnessy and the late Sir William Van Horne.

Edward S. French
Newly-Elected President of the Boston & Maine.

His rise to power was due to great ability joined with an abounding vitality. His physical energy was such that he could not endure the rather sedentary life of a clerk, and he took the first opportunity to get into the active part of transportation. He enjoyed his life as a brakeman, for he called it that of a real "he man". He has always had that idea of railroading, as shown in a list of instructions given to an editor of the Erie's house organ, the Erie Railroad Magazine, in which he disapproved of features lacking in virility, and advised that the wives of railroad men could learn about dress patterns in publications intended for the feminine reader only.

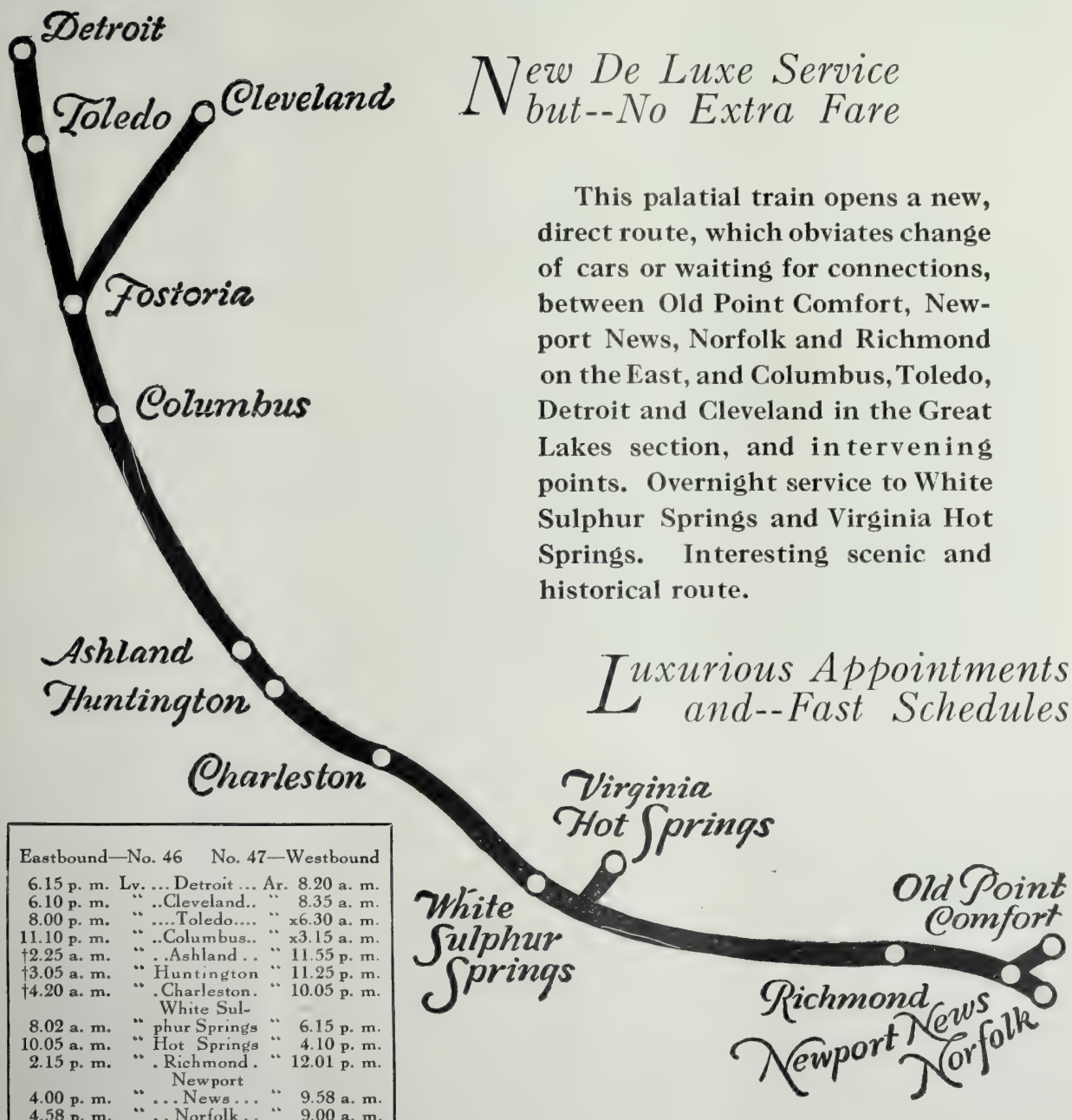
In his long career first serving with the Chicago, Milwaukee & St. Paul, and then with the old Minneapolis & Pacific, the Minneapolis, St. Paul & Sault Ste. Marie, the Baltimore & Ohio and, at last, in his 26 years as head of the Erie, he held himself and all who were under him to the ideal that railroading is the task worthy of supreme effort.

His upbuilding of the Erie was a labor which required not only boundless and virile force, but wide vision. He recognized that eventually the railroads would have to depend more than they did in their earlier years, upon long haul, through freight business. Hence the creation of easier grades, the development of huge locomotives and 125-car trains for the advancement of faster and more economical transportation. He did not think lightly of passenger traffic, as some of his critics have tried to make it appear, but he earnestly believed

—U. & A. Photo

Latest Picture of the Interstate Commerce Commission: Left to Right, Standing, W. E. Lee, C. R. Porter, T. F. Woodlock, Ezra Brainerd Jr., P. J. Farrell, Hugh Tate. Seated: J. B. Eastman, B. H. Meyer, Frank McManamy, Chairman; C. B. Aitchison, Ernest I. Lewis.

THE SPORTSMAN



New De Luxe Service but--No Extra Fare

This palatial train opens a new, direct route, which obviates change of cars or waiting for connections, between Old Point Comfort, Newport News, Norfolk and Richmond on the East, and Columbus, Toledo, Detroit and Cleveland in the Great Lakes section, and intervening points. Overnight service to White Sulphur Springs and Virginia Hot Springs. Interesting scenic and historical route.

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Eastbound—No. 46			No. 47—Westbound
6.15 p. m.	Lv.	... Detroit ... Ar.	8.20 a. m.
6.10 p. m.	"	..Cleveland.. "	8.35 a. m.
8.00 p. m.	"	....Toledo.... "	x6.30 a. m.
11.10 p. m.	"	..Columbus.. "	x3.15 a. m.
†2.25 a. m.	"	..Ashland.. "	11.55 p. m.
†3.05 a. m.	"	Huntington "	11.25 p. m.
†4.20 a. m.	"	.Charleston. "	10.05 p. m.
8.02 a. m.	"	White Sulphur Springs "	6.15 p. m.
10.05 a. m.	"	Hot Springs "	4.10 p. m.
2.15 p. m.	"	.Richmond. "	12.01 p. m.
4.00 p. m.	"	Newport ...News... "	9.58 a. m.
4.58 p. m.	"	..Norfolk.. "	9.00 a. m.
4.30 p. m.	"	..Old Point.. "	9.15 a. m.

† Sleepers from Toledo and Columbus may be occupied at Ashland until No. 34 leaves 6:45 a. m., arriving Huntington 7:20 a. m., Charleston 9:00 a. m.
x Sleepers from Charleston may be occupied at Columbus and Toledo until 7:30 a. m.

The Chesapeake and Ohio Lines

An Old Time Ferry Boat Once Operated by the Lackawanna Railroad.

that the automobile and the self-propelled bus eventually would become rivals of the Iron Horse; that motor trucks would vie for the short haul freight service of the railways. In fact, under his direction, the Erie was among the first roads to utilize motor trucks as auxiliaries.

When Mr. Underwood gave up his active duties in 1927 and received the title of retired president he did not relinquish his hold on the present, nor lose one whit of his keen zest for life. He still maintains an office of his own at 50 Church street, New York, the building where executive departments of the Erie are housed. A secretary who has been with him 30 years is in charge. Mr. Underwood does not go there often, perhaps two or three times a week; sometimes he is away for long periods. When he is there he dictates his letters with his old time verve and terse English. He lives in West End avenue and also belongs to several important social clubs such as the Metropolitan and the Brook. In the summer he likes most to stay on his large estate near his birthplace.

The New President of the B & M

Edward S. French of Springfield, Vt., who was elected president of the Boston & Maine Railroad last month, is now the operating head of several independent railroads in northern New England, and president of a group of waterfront and warehouse rail terminals at Boston. The new president is 46 years old, a native of Maine, received his early education in the public schools of Somerville, Mass., was graduated from Dartmouth College in 1906, and has spent all his business life in New England. He is one of the 12 Vermont members of the New England Council.

In announcing the election of Mr. French as permanent successor to the late Mr. Hannauer, the board of directors said:

"In Mr. French, the board believes it has secured for the railroad a president who will command the confidence of stockholders, the respect and cooperation of officers and employes, and the confidence and support of the New England public and its regulatory bodies. These he has consistently won in connection with the various railroad and business enterprises which he has handled so successfully. With his ability and with his close contact and familiarity with the conditions and needs of the Boston & Maine and its territory, we believe he will be able to contribute substantially to the further development of the road.

"Mr. French takes over a loyal and effective organization functioning under an able corps of officers, which has carried on well during the interim.

"Mr. Perkins has accepted election as chairman of the board, and will continue his active association with the railroad. The board desires at this time to make public acknowledgment of his services as acting president. In the five months since the death of Mr. Hannauer, Mr. Perkins, although a busy man of large affairs, has given the railroad practically his full time, on the road and at his desk, at great personal sacrifice. Matters of prime importance to the railroad have been successfully concluded, have been well started or advanced, under his direction."

It was pointed out that the Boston & Maine resumed payment of dividends April 1 on its common stock after a lapse of 17 years, with dividends now being paid on all classes of its securities, and with all problems of refinancing funded indebtedness solved for the next two years by the recent issue of $15,000,000 5 per cent bonds.

The new head of the Boston & Maine has had a wide range of interests and activities, from practically all of which he will now resign, it is stated. These activities have included: Vice president and general manager, St. Johnsbury & Lake Champlain Railroad since 1925; president, Montpelier & Wells River Railroad since 1926; president, Barre & Chelsea Railroad since 1926; president, Springfield (Vt.) Terminal Railway since 1920; president, Mystic Terminal Company (comprising Boston waterfront terminals serving the Boston & Maine) since 1927; director, Rock of Ages Granite Corp. since 1927; vice president and director, Woodbury Granite Co. of Burling-

GOLD

She dines in COMFORT

THE soft glow of rose shaded lights the even warmth.

It is hard to remember those chill evenings of fifty years ago, when the numbed traveler's mittened hands fumbled for a sandwich in the box upon his knee.

Fifty years ago Edward Gold had just presented the first modern type car heating equipment. And today, efficient Gold equipment makes possible the luxury which is modern travel.

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Victoria Works, Millhouses Sta., Sheffield

GOOD AS GOLD
NEW YORK

P & A Photo

The North German Lloyd Liner, Europa, Which Crossed the Atlantic in 36 Minutes Less Time Than the Bremen of the Same Family: Four Days, 17 Hours, 6 Minutes.

ton, Vt., since 1927; vice president and director, John T. Slack Corpn., Springfield, Vt., re-worked wools, since 1922. In addition, he has served as officer or director of national banks at Barre, Vt., and Brattleboro, Vt., and has included among his other northern New England interests a hardware business, a woolen mill, a farm machine company, and a group of mines and mills manufacturing talc. He has been for several years a consultant for railroads in Maine.

Mr. French has long had a close association with the territory served by the Boston & Maine. During high school and college vacations, and for a year after he was graduated from Dartmouth he worked for the Boston & Maine, the railroad he now heads. His jobs covered a range of operating and traffic department tasks, which, when he was only a little more than a year out of college, led to his being appointed general manager of the White River Railroad in 1908. He became its president in 1920.

Success with the White River line resulted in his appointment as receiver for the Springfield Electric Railway in 1920. He reorganized the property as the Springfield Terminal Railway, and was appointed its president. Meanwhile, he had been extending his business interests in the granite industry, and in other lines, and had entered upon one of the most varied and one of the most extensive active business careers in northern New England. It was to him that the industries and communities served by the St. Johnsbury & Lake Champlain, the Barre & Chelsea and Montpelier & Wells River roads turned when the problems of branch line operation pressed acutely in 1925-26, and his management of these properties saved the railroads and their service to the communities under local operation.

As stated by the board of directors, the new president takes over a "new Boston & Maine," the railroad having been rehabilitated financially and modernized in large degree in recent years. Under the administration of Chairman Homer Loring, of President Hannauer and of Mr. Perkins as acting president, the road has been reorganized and its service stepped up to new standards of efficiency, with improved operating results. Millions of dollars have been spent on new classification yards, the new North Station, new locomotives and other equipment, rock ballasting, rebuilding bridges, laying heavier rail and in other directions. The railroad is engaged this year in a further program of improvements aggregating $16,000,000 in addition to the yearly replacements that run into additional millions.

B & O Cools Its Diners

The first railroad passenger car to manufacture its own weather was successfully demonstrated April 14 by the Baltimore & Ohio and the Carrier Engineering Corpn. of Newark, N. J., when a diner was run in a regular train between Baltimore and Cumberland. The car is completely equipped to cool and cleanse the air and provide ideal conditions of comfort regardless of the season or outdoor weather. It was found that on the hottest days, not only a temperature of 10 to 15 degrees below that outside can be obtained, but even more important, that excessive humidity during muggy summer weather can be removed. As proof of this, with full winter heating capacity of the car turned on, intensified by the heat from the kitchen and already warm outdoor weather, the new system was set in operation to counteract these effects and the temperature was reduced 23 degrees in 20 minutes. This test was made by Colonel George H. Emerson, chief of motive power and equipment, J. H. Davis, chief of electric traction of the Baltimore & Ohio; O. M. Ragsdale, manager standard products department, Richard Arf, mechanical engineer, of the Carrier Engineering Corpn. and other representatives of both companies.

"Man can fly like a bird, but he never will be able to sit comfortably on a barbed wire fence.—*Lord Dewar.*

"The man who succeeds in his work is the man who can keep quiet and placid when there is very severe pressure."—*Charles E. Hughes.*

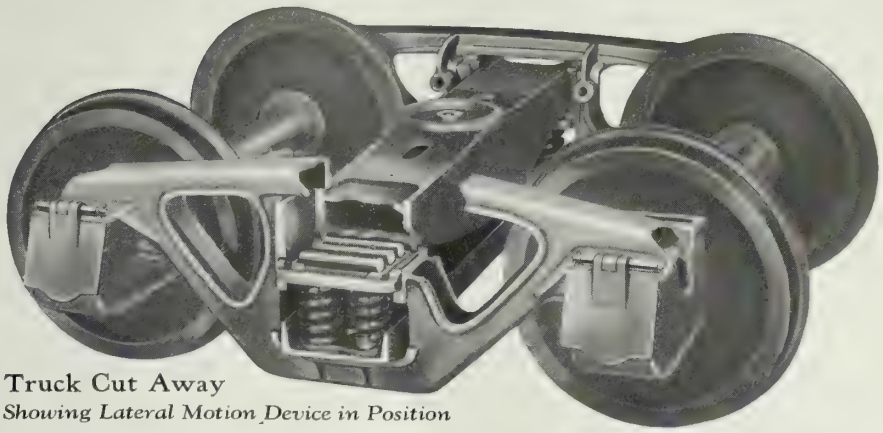
STANDARD CAR TRUCK CO.

1322 McCORMICK BLDG., CHICAGO

The BARBER Lateral Motion Device

Is less expensive than swing hangers and has no dangerous wearing parts. Under fair usage it will last the life of the car.

1,100,000 cars equipped and in service.



Truck Cut Away
Showing Lateral Motion Device in Position

The Barber Lateral Motion Device is the only simple and practical substitute for "swing hangers."

All passenger car trucks are equipped with lateral motion through some type of swing hanger. At one time swing hangers were extensively used on freight car trucks, but were discontinued because excessive wear soon put them in a dangerous condition. A defective hanger in a moving truck nearly always resulted in a serious wreck.

The Barber Lateral Motion Device eliminates the danger element and the consequent dissatisfaction. It provides the means of giving freight car trucks the same easy riding quality so much desired in passenger equipment, and as a result decreases wear and tear on rolling stock, delays, accidents and actual money losses which usually follow in the wake of wrecks and tie-ups.

The difference between the cost of a rigid truck and one equipped with the Barber Lateral Motion Device is so small, that the resultant saving in continuous car service will pay for the device in a short time.

Decreases Wheel Flange Wear, Rail Wear and Train Resistance

—

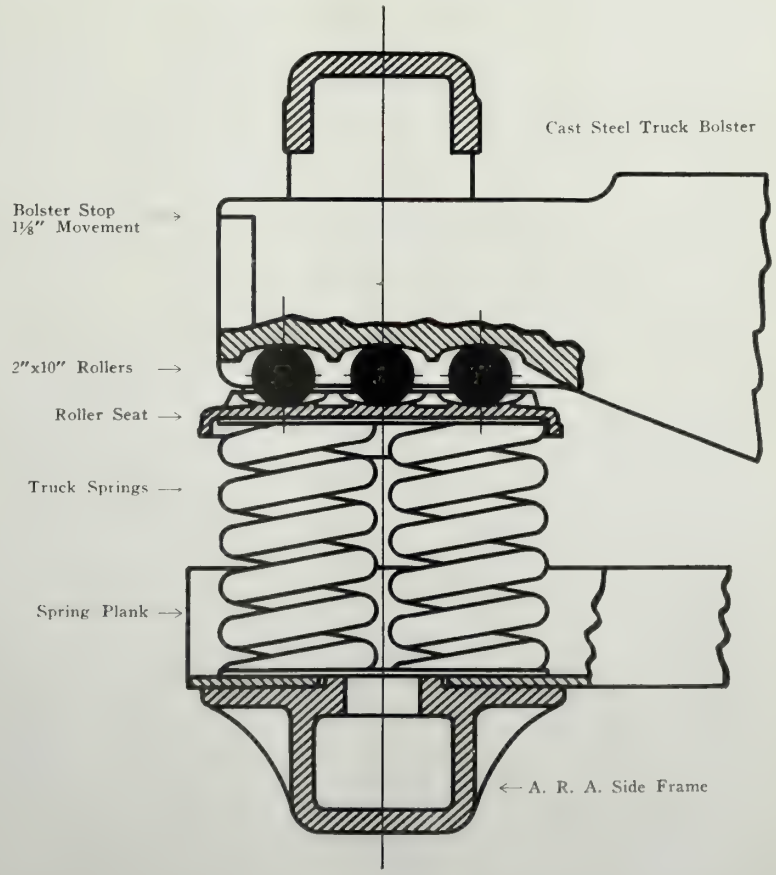
Lessens Causes of Derailments

—

Saves wear on Coupler Knuckles and Journal Brasses, all of which reduces freight damage claims.

—

Can be applied
to
American Steel Foundry
Bettendorf
Buckeye
Gould Coupler Co.
and
Scullen
Side Frames
and Bolsters.



UNION PACIFIC RAILROAD COMPANY

THIRTY-THIRD ANNUAL REPORT—YEAR ENDING DECEMBER 31, 1929.

TO THE STOCKHOLDERS OF UNION PACIFIC RAILROAD COMPANY:

The Board of Directors submits the following report of the operations and affairs of the Union Pacific Railroad Company for the calendar year ended December 31, 1929, *including* the Oregon Short Line Railroad Company, whose entire capital stock is owned by the Union Pacific Railroad Company, the Oregon-Washington Railroad & Navigation Company, whose entire capital stock (except fifteen qualifying shares held by Directors) is owned by the Oregon Short Line Railroad Company, and the Los Angeles & Salt Lake Railroad Company, whose entire capital stock is owned, one half each, by the Union Pacific Railroad Company and the Oregon Short Line Railroad Company. For convenience, the four companies are designated by the term "UNION PACIFIC SYSTEM."

INCOME

The operated mileage at close of year and income for the calendar year 1929, compared with 1928, *after excluding all offsetting accounts between the Union Pacific Railroad Co., Oregon Short Line Railroad Co., Oregon-Washington Railroad & Navigation Co., and Los Angeles & Salt Lake Railroad Co.*, were as follows:

Operated Mileage at Close of Year	Calendar Year 1929	Calendar Year 1928	INCREASE	DECREASE.
Miles of road	9,878.21	9,857.53	20.68	
Miles of additional main track	1,554.67	1,547.16	7.51	
Miles of yard tracks and sidings	4,054.78	3,919.82	134.96	
Total Mileage Operated	15,487.66	15,324.51	163.15	
INCOME.				
Operating Revenues	$217,356,592.76	$215,169,245.62	$2,187,347.14	
Operating Expenses	147,026,561.37	146,256,488.06	770,073.31	
Revenues over Expenses	$70,330,031.39	$68,912,757.56	$1,417,273.83	
Taxes	17,089,568.34	15,978,221.79	1,111,346.55	
Uncollectible Railway Revenues	13,952.59	9,647.37	4,305.22	
Railway Operating Income	$53,226,510.46	$52,924,888.40	301,622.06	
Rents from use of joint tracks, yards, and terminal facilities	1,452,821.57	1,064,656.17	388,165.40	
	$54,679,332.03	$53,989,544.57	$689,787.46	
Hire of equipment—debit balance, and rents for use of joint tracks, yards, and terminal facilities	9,353,763.57	10,170,549.54		$816,785.97
Net Income from Transportation Operations	$45,325,568.46	$43,818,995.03	$1,506,573.43	
Income from Investments and sources other than transportation operations	21,598,472.76	20,346,558.13	1,251,914.63	
Total Income	$66,924,041.22	$64,165,553.16	$2,758,488.06	
Deduct.				
Fixed and Other Charges	17,667,998.37	18,058,681.02		$390,682.65
Net Income from All Sources	$49,256,042.85	$46,106,872.14	$3,149,170.71	
DISPOSITION OF NET INCOME.				
Dividends on Preferred Stock of Union Pacific Railroad Company	$3,981,724.00	$3,981,724.00		
Sinking Fund Requirements	10,000.00		$10,000.00	
	$3,991,724.00	$3,981,724.00	$10,000.00	
Surplus for Common Stock of Union Pacific Railroad Company	$45,264,318.85	$42,125,148.14	$3,139,170.71	
Per Cent earned on $222,291,600 par value	20.36	18.95	1.41	
Dividends on Common Stock	22,229,160.00	22,229,160.00		
Surplus, Transferred to Profit and Loss	$23,035,158.85	$19,895,988.14	$3,139,170.71	

Operating results for year 1929 compared with year 1928:

		Calendar Year 1929.	Calendar Year 1928.	INCREASE	DECREASE	PER CENT.
	Average miles of road operated	9,869.40	9,813.48	55.92		.6
	OPERATING REVENUES					
1.	Freight revenue	$171,745,751.07	$169,568,273.35	$2,177,477.72		1.3
2.	Passenger revenue	26,323,718.00	26,886,972.96		$563,254.96	2.1
3.	Mail revenue	5,232,626.30	4,680,872.46	551,753.84		11.8
4.	Express revenue	4,464,243.37	4,347,280.52	116,962.85		2.7
5.	Other passenger-train revenue	3,874,020.32	3,877,439.45		3,419.13	.1
6.	Other train revenue	101,721.96	74,667.03	27,054.93		36.2
7.	Switching revenue	1,306,024.48	1,302,709.49	3,314.99		.3
8.	Water line revenue	72,390.43	80,459.55		8,069.12	10.0
9.	Other revenue	4,236,096.83	4,350,570.81		114,473.98	2.6
10.	Total operating revenues	$217,356,592.76	$215,169,245.62	$2,187,347.14		1.0
	OPERATING EXPENSES					
11.	Maintenance of way and structures	$28,246,009.61	$28,243,556.89	$2,452.72		—
12.	Maintenance of equipment	38,283,100.50	39,054,207.81		$771,107.31	2.0
13.	Total maintenance expenses	$66,529,110.11	$67,297,764.70		$768,654.59	1.1
14.	Traffic expenses	4,909,341.10	4,638,306.39	$271,034.71		5.8
15.	Transportation expenses—rail line	62,638,350.86	61,713,749.85	924,601.01		1.5
16.	Transportation expenses—water line	56,453.22	61,979.82		5,526.60	8.9
17.	Miscellaneous operations expenses	4,531,661.95	4,679,814.51		148,152.56	3.2
18.	General expenses	8,362,828.93	7,920,081.94	442,746.99		5.6
19.	Transportation for investment—*Credit*	1,184.80	55,209.15		54,024.35	97.9
20.	Total operating expenses	$147,026,561.37	$146,256,488.06	$770,073.31		.5
21.	Revenues over expenses	$70,330,031.39	$68,912,757.56	$1,417,273.83		2.1
	TAXES					
22.	State and county	$11,988,300.23	$11,433,374.14	$554,926.09		4.9
23.	Federal income and other federal	5,101,268.11	4,544,847.65	556,420.46		12.2
24.	Total taxes	$17,089,568.34	$15,978,221.79	$1,111,346.55		7.0
25.	Uncollectible railway revenues	$13,952.59	$9,647.37	$4,305.22		44.6
26.	Railway operating income	$53,226,510.46	$52,924,888.40	$301,622.06		.6
27.	Equipment rents (debit)	6,974,463.90	7,965,912.58		$991,448.68	12.4
28.	Joint facility rents (debit)	926,478.10	1,139,980.79		213,502.69	18.7
29.	Net railway operating income	$45,325,568.46	$43,818,995.03	$1,506,573.43		3.4
	Per cent—Operating expenses of operating revenues	67.64	67.97		.33	.5

[ADVERTISEMENT]

FREIGHT TRAFFIC
(*Commercial Freight only*)

Tons of revenue freight carried	36,250,018	35,717,820	532,198	.....	1.5
Ton-miles, revenue freight	14,430,923,565	14,301,827,671	129,095,894	.....	.9
Average distance hauled per ton (*miles*)	398.09	400.41	.....	2.32	.6
Average revenue per ton-mile (*cents*)	1.172	1.168	.004	.....	.3
Average revenue per freight-train mile	$7.47	$7.46	$.01	.....	.1

PASSENGER TRAFFIC
(*Excluding Motor Car*)

Revenue passengers carried	3,021,329	3,091,964	.....	70,635	2.3
Revenue passengers carried one mile	894,452,892	889,651,207	4,801,685	.....	.5
Average distance hauled per passenger (*miles*)	296.05	287.73	8.32	.....	2.9
Average passengers per passenger-train mile	47.76	47.23	.53	.....	1.1
Average revenue per passenger-mile (*cents*)	2.895	2.942	.....	.047	1.6
Average revenue per passenger-train mile, passengers only	$1.38	$1.39	.....	$.01	.7
Average total revenue per passenger-train mile	$2.09	$2.06	$.03	.....	1.5

The increase of $2,177,477.72 or 1.3% in "Freight Revenue" was due to an increase of .9 per cent in net ton-miles of revenue freight carried, and to an increase of .3 per cent in average revenue per ton-mile occasioned by fluctuations in the kinds of commodities hauled. Due chiefly to large crops of oranges in Southern California and of vegetables in Idaho and California, there were substantial increases in the movement of these commodities, except potatoes, the movement of which decreased because of a small hold-over from the 1928 crop in Idaho, which was less than the 1927 crop. The transportation of petroleum oils also increased, principally because of a greater demand for gasoline for automobiles, and for fuel oil by industries. Improved conditions in the mining industry resulted in a heavier movement of lead, zinc and copper from smelters in Utah, Idaho and Montana; and the movement of gravel, sand and stone increased chiefly because of more highway improvements and the construction of a pleasure pier at Long Beach, California. Coal moved in greater volume due to colder weather during the winter months. Shipments of manufactures and miscellaneous commodities increased substantially, particularly (*1*) iron and steel pipe, because of more construction of natural gas pipe lines in System territory, (*2*) machinery and boilers, due to general increase in industrial activities, and (*3*) automobiles, tractors, and parts, early in the year, because of heavy demand and large production, partially offset by a decrease in the latter part of the year when demand lessened and production was curtailed. The movement of deciduous fruits and grain decreased substantially, due chiefly to smaller crops, of deciduous fruits in California and the Northwest States, of wheat in System territory with unfavorable markets, and of corn in Kansas; and to a small hold-over from the 1928 corn crop in Nebraska. There were decreases also in the transportation of livestock and forest products, attributable respectively to a smaller supply of marketable cattle and sheep because of poor condition of the ranges and to general depression in the lumber industry.

The decrease of $563,254.96 or 2.1% in "Passenger Revenue" was due principally to continued diversion of business to motor vehicles.

The increase of $551,753.84 or 11.8% in "Mail Revenue" was due to an increase of approximately 15 per cent in mail pay rates effective August 1, 1928. The increase in rates was retroactive to May 9, 1925, but the additional amount for the period May 9, 1925, to July 31, 1928, $2,096,735.52, collected in 1929, was credited to Profit and Loss (see Table 2) instead of to the current year's income.

The increase of $116,962.85 or 2.7% in "Express Revenue" was due principally to an increase in movement of less than carload express traffic.

The decrease of $114,473.98 or 2.6% in "Other Revenue" was due principally to the results of operations in Southern Utah Parks being included in the operating accounts of the Railroad Companies in prior years, while the net results of operations are now included as Miscellaneous Income or Miscellaneous Charges.

The increase of $2,452.72 in "Maintenance of Way and Structures Expenses" was due to ordinary fluctuations in repairs and renewals.

The principal track materials used during the year in making renewals were as follows:

New steel rails	246.55 track miles
Second-hand steel rails	54.72 " "
Total	301.27 track miles

excluding yard tracks and sidings, equivalent to 2.9 per cent of the track miles in main track at the beginning of the year. Ties 2,404,096 (98.2 per cent treated), equivalent to 6.2 per cent of all ties in track at the beginning of the year. Tie plates 1,295,355 and continuous rail joints 95,671.

The decrease of $771,107.31 or 2% in "Maintenance of Equipment Expenses" was due principally to reduction of $490,000 in charges for the retirement of obsolete and worn-out equipment, all necessary retirements however having been made. Equipment in service was fully maintained, maintenance work having been only slightly different from last year, but due to greater effectiveness resulting from the continued application of new appliances to equipment, the installation of improved machinery and other facilities, and improved methods, the work cost less even though there was an increase of approximately $638,000 in wage schedules.

The increase of $271,034.71 or 5.8% in "Traffic Expenses" was due chiefly to increase in expenditures for advertising.

The increase of $924,601.01 or 1.5% in "Transportation Expenses—Rail Line" was due principally to increase of 1.5 per cent in freight-locomotive miles and 1 per cent in freight-train miles because of improved competitive train schedules, resulting in increases in quantities of fuel consumed, in yard forces and in train and engine supplies and expenses, and to increases in wage schedules, chiefly of trainmen, and payments for loss, damage and casualties; partially offset by decrease in price of fuel.

The decrease of $148,152.56 or 3.2% in "Miscellaneous Operations Expenses" was due principally to the results of operations in Southern Utah Parks being included in the operating accounts of the Railroad Companies in prior years, while the net results of operations are now included as Miscellaneous Income or Miscellaneous Charges.

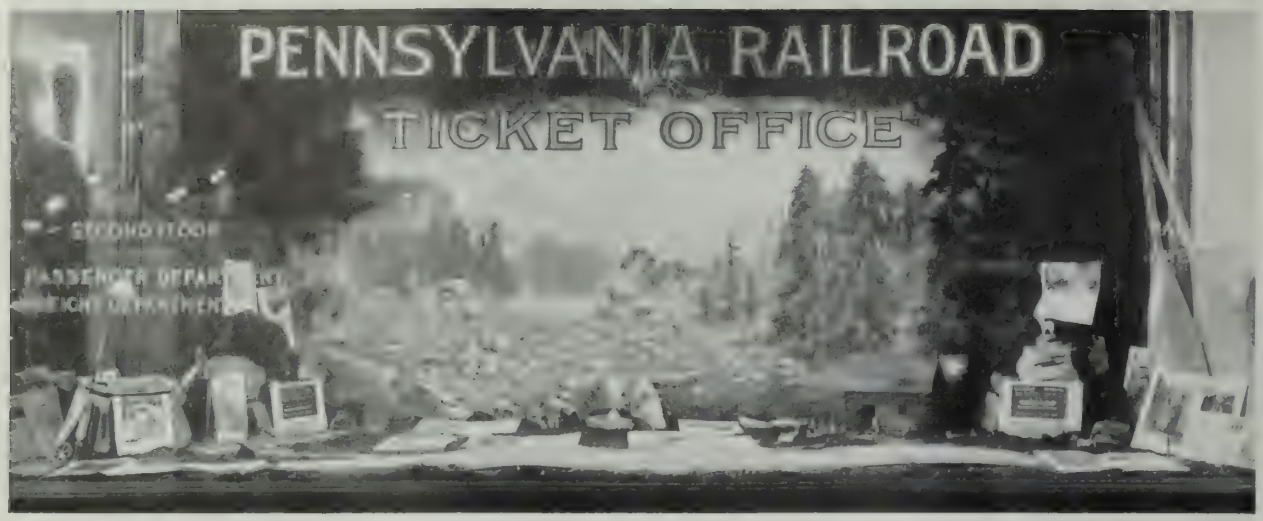
The increase of $442,746.99 or 5.6% in "General Expenses" was due principally to increases in pension payments and valuation expenses.

An analysis by classes of the increase of $1,111,346.55 or 7% in "Taxes" is shown in the table. The increase in State and county taxes resulted from increases in several States in both assessments and tax levies. The increase in Federal income and other Federal taxes was due to increase in taxable income and profits, partially offset by a decrease in the income tax rate from 12 to 11 per cent.

The decrease of $991,448.68 or 12.4% in "Equipment Rents (Debit)" was due chiefly to decrease in mileage payments on refrigerator cars, there having been a substantial decrease in number of carloads of perishable commodities handled.

The decrease of $213,502.69 or 18.7% in "Joint Facility Rents (Debit)" was due chiefly to an accounting adjustment.

[ADVERTISEMENT]



A Well-Decorated Window Attracts Thousands, and Inevitably Creates the Travel Mood. This Means Business.

Window Displays Get Business

FRED E. KUNKEL

THE VOICE of the ticket office window usually is dumb and silent in the average railroad ticket office, but the Pennsylvania Railroad Company in Washington, believes in making the windows the loud speakers of its passenger business. It keeps the windows working all the time, day and night, to sell an interesting travel story to the public.

A window without a series of good displays, not only fails to attract business, but is indeed a liability rather than an asset to the business. The average passenger agent may think he has nothing to sell or of sufficient interest to show to attract the passing public, and that, consequently, there is no need for a fetching window display. However, the Pennsylvania ticket office in the heart of the business section of Washington seems to profit quite extensively from the use of good window displays.

One particularly attractive window display consisted of a representation of mountain and lake scenery. A log cabin about one foot high and 18 inches long was the center of attraction. A sand path led up to it from the left hand corner of the window, and a large quartz rock was used to represent a mountain at the left of the cabin. Rocks were also piled up on the left and right side of the window with moss around them. There were also a few pine trees on the side and a miniature mountain goat.

On the left side of the window were three large fishing rods arranged in triangular form, and on the right side two canoe paddles. Small telegraph poles were in the window very effectively, running along the rocks and the mountain road, up to the cabin. A toy automobile was winding up the road toward the log cabin with the driver at the wheel.

The background consisted of a painting of mountain scenery with a golden glow against the top of the rocks. A stream wound around through the window to add realistic effect. To give an outdoor effect pine limbs were suspended all around, hanging down from the top of the window. Two or three good photographs of various beauty spots along the Pennsylvania Railroad were also placed in the window.

In the front of the window, all the way across, was placed a long green strip six inches wide and five feet long. On this was printed the fact that a round trip, summer tourist's fare was effective to western destinations May 18 and June 1, stating that the ticket force would be glad to give full information, and that copies of booklets would be supplied on request. The different booklets displayed in the window were laid open at pages showing different scenic effects, and these also attracted considerable attention.

The window featured such points of interest as Salt Lake City, the Yellowstone Park, the Pacific Northwest, Canadian National Parks, Colorado, California and the Grand Canyon. A small statue of "The Spirit of the West" in the center of the window showed human nature relaxing and enjoying itself on the summer vacation trip.

Another attractive window used to bring out the crack trains of the Pennsylvania Railroad Company was a "bridge scene" which tied up with the popular pastime. This window attracted a lot of attention with the motif of the "bridge" game bringing out the railroad end of merchandising very effectively before the public. The background consisted of a painting of a large bridge running the full length of the window, with the word "bridge" in the top span and "The Popular Game" shown in the archway of the supporting span, while underneath were shown the four aces, representing the crack trains.

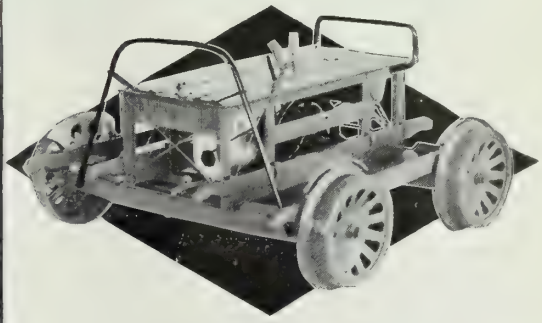
In the center of the window was a large square with cards spread upon it and arranged as one sees them in the player's hand, containing the ace, king and queen of hearts, the ace, king and queen and jack of spades, the ace, king and queen of diamonds and the ace, king and queen of clubs, which were marked "sure winners". The ace of diamonds at the left represented the crack train to St. Louis, the ace of spades the Liberty Limited to Chicago, the ace of hearts the Red Arrow to Detroit, and the ace of clubs the Congressional Limited to New York.

In the middle of the window a card table was laid with its legs folded, with tally cards at each corner, and the well known Pennsylvania trade mark "The Keystone" in the center, with the wording "Mr. Work says: —'To enjoy any card game use clean cards.'" Four hands of cards lay in the North, West, East and South, spread open, ready for the players to take them.

A sign in the window said "Best quality linen finish bridge packs, two decks $1.20, on sale here." A few circulars about the Liberty Limited, and the Red Arrow, and circulars showing single room, sleeping cars, etc., were laid open ready for use.

SECURITY

By treacherous rivers, in mountain passes, on empty prairies—an army of workers is always on guard over the $25,000,000,000 worth of Railroad property—insuring against any possible let-up in service, and protecting the precious cargoes riding the rails.



M19 Spring Mounted Inspection Car

This car is very popular with linemen and signalmen. Handles four boxes of battery renewals, two 10-gallon cans of water and two men—or, the car comfortably seats four men. Other inspection models include: C1—air cooled for one or two men, and MM9—water cooled for one or two men. Complete details at your request.

While no price is too high to pay for security, the gigantic scale upon which the Railroad World operates demands that the cost be reasonable as possible. Every tool, every product used on maintenance work is carefully checked in service as to efficiency, dependability and cost of operation. No claims or guesses count—only facts and figures. The Railroad World KNOWS!

And the Railroad World KNOWS Fairmont Equipment—knows it to represent ***Lowest Over-all Cost.*** That is proved by the fact that ***over half of all the motor cars now in use are Fairmont products!*** Few, if any, products used in maintenance work bear such an endorsement. And as long as Railroads are operated on figures, the great majority of Motor Cars riding the rails will bear the Fairmont shield.

FAIRMONT RAILWAY MOTORS, INC.

FAIRMONT, MINNESOTA, U. S. A.

General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO

District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans

FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles and safety appliances.

Fairmont Mudge — Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT

Cafe-Lounge Car, Marshalltown, on the North Star Limited of the Minneapolis & St. Louis Railroad.

A black card table cover was used on the card table.

This window attracted passers-by day and night. Crowds always were standing about, admiring the window and studying its design, some going in to buy cards and others to obtain literature about the crack trains. In fact, both of these windows caused a lot of comment and produced good results in a sales way.

Pennsylvania windows not only have an interesting tale to tell every month, but they are also novel and unique, and they attract many persons who stop to read some interesting facts and figures about Pennsylvania Railroad accommodations.

Good window displays not only attract the attention of passers-by, but they help also to fix more clearly in the public mind the precise place where the railroad company is doing business. Such windows not only advertise and sell more passenger service, but they also make a strong bid for other business. Good selling windows are the eyes of the ticket office, the avenue of sales approach to the customer's patronage. They help to get more of the business to be had.

New Cars for the M & St L

The Minneapolis & St. Louis Railroad has placed in service new parlor cafe cars on the "North Star Limited" between the Twin Cities and St. Louis. Three new gas-electric cars are now operated between Winthrop, Minn.; New Ulm, Minn., and Storm Lake, Iowa, and between Mason City, Iowa, and Oskaloosa, Iowa, and Oskaloosa, Iowa, and Peoria, Ill.

The new parlor-cafe cars were built in the Cedar Lake shops of the company at Minneapolis, and have all the appointments of a lounge and club car. The lounge compartment is equipped with radio, writing desks, luxuriously upholstered, individual chairs, and davenports, and has a seating capacity of 20 persons. The dining compartment has a seating capacity of 18, and regular dining car meals and lunches are served. The cars are brilliantly lighted from overhead, supplemented by wall lamps conveniently placed for reading. The interior finish is mahogany and the exterior standard Pullman color.

The new gas-electric cars replace steam passenger trains Nos. 28 and 29 on this railroad between Winthrop, Minn., and Storm Lake, Iowa; steam trains 9 and 10 between Mason City and Oskaloosa; and steam trains 19 and 20 between Oskaloosa and Peoria. They are the last word in gas-electric equipment, of all steel construction, length 75 feet, having mail compartment of 15 feet, and baggage compartment of 22 feet. The passenger compartment has a seating capacity of 32 passengers. The seats are finished in gray Spanish leather with spring cushions and are exceedingly comfortable. The cars are equipped with hot water heating and electric lighting systems.

The engine is of a 300 horsepower, gas-electric type, occupies a 14 ft. compartment, and has sufficient power to haul additional coaches. The passenger compartment is finished in mahogany and the exterior of the cars is in lacquer. They are capable of a speed of 65 miles an hour and have

On the Next Page You'll Find a Story About This Michigan Central Twin Tube at Detroit.

Baker

IN THIS YEAR of smaller profit margins, the concern with the lowest production costs will win. We are prepared to prove that Baker Trucks can reduce handling costs in production by as much as 75%. And that, too, without adding to capital charges because Baker Trucks actually pay back their entire purchase price—in payroll saved—in from 3 to 12 months.

Baker Industrial Truck Division of

THE BAKER-RAULANG COMPANY

2180 West 25th St. •• Cleveland, Ohio

Main Waiting Room in the New Union Station at Atlanta.

a total weight of 130,000 lbs. They were built by the St. Louis Car Co. at a cost of $52,000.

The Michigan Central Twin Tube

The twenty-first anniversary of the Detroit twin-tube tunnel, used exclusively by the Michigan Central Railroad, will be celebrated this year both by that road and by shippers. The twin-tube, the only one of its kind in existence, is a unique railroad facility, for, being free from all climatic interference, it enables the Michigan Central to give a service to its patrons that is unequaled by any other railroad using the Detroit-Windsor, Ont., gateway.

The tunnel is one and three-eighths miles in length from portal to portal, and two and one-half miles from summit to grade. Only electric locomotives, insuring speed and safety, are used in the tunnel.

Prior to the opening of the Detroit River tunnel, ten car ferries were abandoned by the Michigan Central as no longer necessary for its purposes. When those ferries, with those of other railroads, were in use, the peak year covering all carload traffic ferried across the river by all Detroit showed in round numbers 735,000 cars. Now, however, through the use of the twin-tube tunnel, the Michigan Central is enabled to care for triple that number whenever the situation warrants. A distinct honor was paid the Michigan Central, when the builder of the vehicular and pedestrian tunnel between Detroit and Windsor, now under construction, made it the same type as the Detroit River tunnel used by the Michigan Central. Thus was the efficiency of that type of tube proved and the service, which can be afforded through a railroad facility such as the Michigan Central constructed, realized.

Atlanta Has New Station

By C. L. Holland

When Nashville, Chattanooga and St. Louis train No. 3 pulled into Atlanta at 6:30 the morning of April 18, the habits of more than a half century were changed as J. B. Hill, president of the road, with the board of directors, detrained and passed smilingly into Atlanta's new Union Station. There was no ceremony and no speech-making, but the arrival of this train marked the opening and dedication of the new building.

The completion of this station is the result of a decision reached in September, 1928, which terminated a battle for a new station that dates back nearly a half century. This, by the way, is the fifth union station Atlanta has had since 1842. The second one was burned by a man named Sherman of military fame while he was leading that well-known march to the sea. It probably was after seeing that station that he made his famous observation about war.

The old station which this one replaces is Atlanta's most historic landmark, long known as the "Car Shed," and always an eye-sore for the city. It was built about 50 years ago, and is to be demolished soon to make room for the Dixie Terminal building, a 26-story structure which will contain office, store, warehouse and cold-storage space.

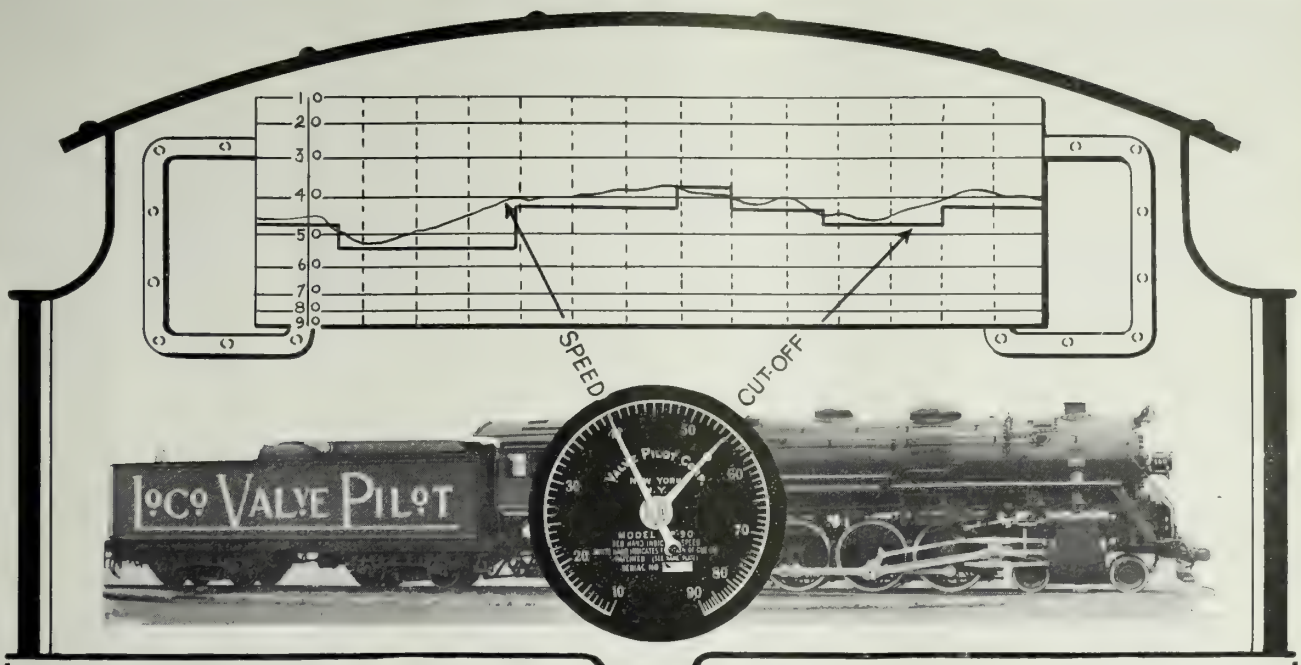
The new station is situated between Forsyth and Spring street viaducts, fronting Forsyth, with a concourse connecting the two viaducts. The building proper is constructed of cut limestone and marble with roof of salmon-colored tiles, and trimmings of Italian travertine marble. It is 296 feet long with the main entrance facing a broad plaza on Forsyth street guarded by massive Roman doric columns.

The main waiting room is 40 by 75 feet with floor space of 3,000 square feet, and has a seating capacity of one hundred. The walls are finished in Italian travertine wainscoating 10 feet and 6 inches in height. The base is of imported black fossil marble. A double row of urn-shaped lamps of milk-white glass and bronze make the lighting scheme all that could be desired. Five bronze ticket windows at the south end of the room are situated beneath the main clock. Unusual features of the room are two mural paintings, one at each end, depicting the railway systems of the south in relation to Georgia portraying the evolution of transportation.

The women's retiring room is 24 by 30 feet with floor space of 750 feet. It is equipped with lavatories of the latest type, circulating ice and hot water. Wicker chairs with deep cushions provide comfort and rest. The waiting room for negroes is 40 by 35 feet with 1,400 feet of floor space with a retiring room 15 by 22 feet with 330 square feet of floor space for the women. The wainscoating of the waiting room is of Sequoia marble, the same height as in the main waiting room, and the base of red ceday marble.

A broad corridor extends from the waiting rooms to a concourse from which three glass enclosed stairways connect, leading down to the platforms. These are protected by four butterfly type sheds 1,000 to 1,350 feet long, served by eight tracks. An annex on the track level provides space for handling U. S. mails, as well as locker rooms and shower baths for the employes. The baggage and parcel rooms are to the left of the main waiting room. Two elevators have been provided, one for passengers and one for baggage. The customary conveniences are provided such as ice water in drinking fountains, hot and cold water in all lavatories, barber shops, soda fountain, luncheonette, commercial telegraph offices and telephone booths.

Work began on this building in



FOR THE ENGINEER

The Dial

indicates speed and Cut-Off and enables him to operate his engine more Efficiently and Economically.

FOR THE OPERATING EXECUTIVE

The tape record

furnishes details of the trip, and data for improving operation.

LOCO VALVE PILOT

VALVE PILOT CORPORATION

230 PARK AVENUE :: :: :: NEW YORK

August, 1929. McDonald & Co., Atlanta, were the designing architects and supervising engineers. The cost was $600,000, of which $250,000 was for the station. The expense was borne by the N. C. & St. L. Ry., lessees of the Western & Atlantic Railroad (the part of the N. C. & St. L. operated between Atlanta and Chattanooga) which is owned by the state of Georgia and which will, in time, revert to the state. The Georgia Railroad and the Louisville & Nashville also will use this station, the three roads having about 30 trains arriving and departing daily.

In one respect this station and its surrounding development is unique in Atlanta, in that it is the first important development of modern "air rights" in that city. Both the station and its approaches are supported on steel girders rising from among the tracks, no material changes having been effected in the original layout. However, it was necessary to remove the Forsyth street viaduct and reconstruct it to fit in with present station and its plaza. The cost of this work was borne jointly by the city, county and the railroad.

The advantages of the new station are many. In its present location railway station facilities are two blocks closer to the hotels and the business sections of the city. At the same time the station is two blocks closer to the Terminal Station; a few feet from trolley cars, as heretofore, the old station was a block from street car transportation. Also the smoke nuisance will be considerably lessened by shortening the distance between the two stations, reducing time consumed in switching between them. Passengers desiring to transfer from one or the other of the stations can walk the distance in two or three minutes.

S. P. Makes Fine Record

Transporting upward of half a billion passengers a cumulative distance of more than fifteen billion miles in the last ten years without death in steam-train accident to one passenger, is the record of the Southern Pacific Company on its Pacific lines. A decade of operation of its lines in six western states under the strictest safety rules and competent employes has made possible this extraordinary record, according to R. J. Clancy, assistant to the general manager of the railroad.

In the ten years just ended, Clancy reports, a total of 404,709,492 passengers, not including persons traveling on free transportation, were carried an aggregate distance of 15,915,677,462 miles, or the equivalent of 639,132 times around the earth, over the Pacific Lines. Last year 33,600,094 revenue passengers traveled a total of 1,528,663,083 miles over the same part of the Southern Pacific's system.

While stating that railroad safety depends on the perfect functioning of many human and mechanical factors, Clancy declared that use of the longest automatic block signal system maintained by any railroad in the world was a paramount feature in the Southern Pacific's safety program.

"What Will They Do Next?"

An express train running at high speed between Toronto and Montreal was connected by telephone April 27 with Ottawa, Washington and London. Sir Henry Thornton, president of the Canadian National Railways, aboard the train, lifted the transmitter and spoke to the operator. In about the same time it takes to make an ordinary telephone connection, he was talking to Secretary Lamont in Washington.

It was the first public use of the new system of communication on the Canadian National system, which will enable travelers en route to telephone to all parts of the United States, Canada and Great Britain.

Carl S. Brandebury, eastern division news editor of the Associated Press, then spoke briefly with Mr. Lamont, after which Sir Henry obtained a connection with London. He talked to C. J. Smith, vice president of the Canadian National, in that city. Then Mr. Brandebury held a two-minute conversation with Harry H. Romer of the Associated Press bureau in London, the voices at both ends of the connection coming distinctly.

The system, which went into commercial use April 27, was devised by J. C. Burkholder, chief engineer of the Canadian National Telegraph.

Through ignorance of what is good and what is bad, the life of men is greatly perplexed.—*Cicero.*

Street Front of the New Union Station at Atlanta.

"PERFECTLY SIMPLE, SIMPLY PERFECT"

WEATHERPROOF!

IN RAIN, SLEET OR SNOW

GRAHAM-WHITE SANDERS

ARE YOUR SURETY AGAINST
POWER LOSSES

ECONOMICAL!

UNDER ALL TRANSPORTATION CONDITIONS

GRAHAM-WHITE SANDERS

RETURN THEIR FIRST COST IN SAVING SAND,
LABOR, AND SANDER REPAIR BILLS

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PAST PERFORMANCE OF

GRAHAM-WHITE SANDERS

PROVES THAT THEY ARE SELF-CLEANING AND
FOOLPROOF AGAINST CLOGGING AND SAND BLASTING.

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GRAHAM-WHITE SANDER CORPORATION
ROANOKE, VA.

T-Z Railway Equipment Co.
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This Old Ferryboat Was Chartered in May, 1775, the Year Before the Declaration of Independence was Signed. It Plied Between Kings Arms Inn, Now Hoboken, and Vesey Street, New York, When That City Had a Population of 22,000. The World's First Steam Ferry Was Operated Over This Route in 1811. The Lackawanna Railroad Took Over the Old Company in 1903.

Behind the Clouds the Sun Is Shining

By J. M. Davis
Prest., the Lackawanna

Growing out of a condition which came to a head a few months ago, there has been some recession in business. Conflicting analyses were advanced as to the reason therefor and, of course, the public worked up much concern regarding the probable effect upon future conditions generally. But, while real money and paper profits were lost no property was destroyed and no territory was laid waste.

In the meanwhile, signs of business recovery are evident. Secretary of the Treasury Mellon says that 1930 will be a year of cheap money. That augurs well for improvements and expansion generally. It has been estimated that new construction, the effect of which is felt in many connected lines of industry, will be $600,000,000 greater than it was last year.

A very significant fact in the background of the picture, the tentacles of which stretch out and, directly or indirectly, touch practically all business and operate to stimulate business in a material manner, is the fact that during recent years our national population has increased about 1,750,000 persons yearly. These added numbers, in addition to the previous population, has to be fed, clothed, housed, find employment and be provided with a constantly increasing number of luxuries. Naturally, this makes more business. Weighing all factors, I have a feeling that when the books for 1930 are closed, the general result will be more satisfactory than many now believe.

Our government recently accorded us a very welcome decrease in taxes. The new rate, however, still seems too great a drain upon the profits of business, and makes it difficult for many to put aside the requisite funds with which to cope with unforeseen contingencies and provide for the rainy day which usually appears in one form or another. I am thoroughly mindful of the war burdens which this nation was forced to assume and believe that the government will further lighten this load on business without undue delay. The national debt has been decreased from $25,482,000,000, in round numbers, in 1920, to $16,931,000,000, in 1929, a stupendous accomplishment. Personally, however, I feel that a portion of our monetary obligations of war should be shouldered by posterity. The load is uncomfortably heavy for business alone to carry. Again, I hold that a sales tax would be the fairest method of prorating the assessment among those in all walks of life.

You all have your tax burdens but, before leaving this subject I thought it might interest you to know that for 1928—the figures for 1929 are not as yet available—the taxes paid by the Lackawanna averaged about $12 a minute, day, night and Sunday. This meant, in effect, that every time a dollar was paid us for passenger transportation or for a freight bill, the payer, in reality, was paying 8 cents in taxes and 92 cents for service, or, that after deducting the actual cost of providing the service, approximately 50 per cent of which represents wages, we were forced to pay out 28 cents of every remaining dollar for taxes.

Statistics covering the last seven years indicate that the Class I railroads of the nation as a whole have paid more to the tax collector than they have in cash dividends to their owners, the stockholders. In 13 years our taxes increased 238 per cent. During the same time the amount paid in dividends increased 22 per cent.

From a recent address by Mr. Davis before the Traffic Club of Syracuse, N. Y.

Make Your Passengers CONSCIOUS of the Comforts You Provide

EVERY railroad man recognizes the complicated nature of passenger service in these luxurious times. Once it was necessary only to run trains from terminal to terminal and people would ride them. Now, with private automobiles competing even for the long hauls, the riding public is not eager to take train trips.

Frankly, the superior comfort of railroad travel is not sufficiently recognized by the traveler. His principal point of contact with the equipment is the seat on which he sits. If it is positively uncomfortable, he complains; if it is merely normally comfortable, he takes no notice of it; but if he sinks into a separate chair with deep, well designed upholstery giving really luxurious comfort, he knows he is comfortable and why.

Luxurious comfort such as this is the most salable commodity of the common carrier. Make your passengers CONSCIOUS of the comforts you provide. Install HALE & KILBURN No. 900 double chairs in your coach equipment.

HALE & KILBURN SEATS

HALE & KILBURN CO.

General Offices and Works: 1800 Lehigh Ave., Philadelphia

SALES OFFICES:

Hale & Kilburn Co., Graybar Bldg., New York.
Hale & Kilburn Co., McCormick Bldg., Chicago.
E. A. Thornwell, Candler Bldg., Atlanta.
Frank F. Bodler, 903 Monadnock Bldg., San Francisco.
W. L. Jeffries, Jr., Mutual Bldg., Richmond.
W. D. Jenkins, Praetorian Bldg., Dallas, Texas.
H. M. Euler, 146 N. Sixth St., Portland, Oregon.

The Union Pacific Station at East Los Angeles.

The News of the Month

What's Been Going on in Transportation, Railroads, Automotive, Supply, Aviation

An express terminal to cost $3,125,000, designed to speed up the handling of express shipments in the Chicago area, will be built during 1930 by the Chicago & North Western Railway, according to Fred W. Sargent, president. Construction will begin at once, and when completed the new terminal, situated just outside the Chicago passenger station of the North Western along the Galena division of the road between Milwaukee avenue and Halsted street, will be second in size only to "Sunnyside" in Brooklyn. Steady employment for 1,300 men, and an immediate market for many types of building material will be offered by the new project. The entire building will be used by the railway express agency, owned by the railroads, which plans to discontinue two or three of its near-loop stations and combine them into the one new station. Situated as it is, just outside the passenger station, the North Western will be able with this new station to save an hour or more in putting express cars into or uncoupling them from trains, thus giving shippers an hour's quicker delivery on incoming express and an hour more leeway on outgoing parcels.

The new building will be of steel and concrete construction with brick exterior walls trimmed in stone. It will be three stories high, 680 feet long and 235 feet wide, with a fourth story at the east end for offices. Total floor area will be 260,000 square feet. The project also calls for a complete set of tracks, platforms, driveways, pavements, lighting and other facilities. There will be 90,000 square feet of loading platforms, and a total track length of 9,900 feet serving them.

The first floor of the new building will be used for housing empty vehicles numbering between 200 and 220, used in the express handling, and all trucks will be kept off the street unless actually in use. The second floor, on a level with the elevated Milwaukee avenue and Halstead street, will have a huge loading platform in the center, and a wide driveway all around. It will be used exclusively for sorting shipments before loading or delivery. The third floor will be a loading and unloading floor, and will be used for the transfer of express to and from the cars spotted at the outside platform. Facilities for storing and charging electric trucks also may be provided on this floor. A refrigeration plant, ice-crushing equipment and a warm room for perishables will be installed.

A.R.A. New Address

Chicago offices of the American Railway Association are now in the Buckingham Building, 59 East Van Buren street. The secretary of Division V, V. R. Hawthorne, has his headquarters on the 23rd floor. His telephone is Webster 7880.

Vaughan Tie Tamper Patent Upheld

Judge Hugh Morris of the United States district court of Delaware, in an opinion handed down April 23, decided the suit of Fanny Minton Vaughan and the Ingersoll-Rand Co. against the Gardner-Denver Co. for infringement of the Vaughan Tie Tamper patent No. 1147660, in favor of the plaintiffs. The Ingersoll-Rand Co. is the principal licensee under the patent.

I.C.C. Approves Texas Line

The Interstate Commerce Commission has approved plans of the Chicago, Rock Island & Pacific and the St. Louis-San Francisco railroads to construct 159 miles of railroad in the north central and Pan Handle district of Texas. The proposals of the two roads are joined and provide for a through and shorter rail route from northern Texas and southwestern Oklahoma to Fort Worth and Dallas.

The commission denied proposal of the Burlington, through a new subsidiary, the Fort Worth & Denver Northern, to build 110 miles of line which was proposed as an alternate. This would have extended from a connection with the Fort Worth & Denver City at Childress through Wellington to Pampa. The commission authorized the Clinton, Oklahoma Western Railroad, a Santa Fe subsidiary, to build a nine-mile branch from Heaton to a point north of the North Fork of the Red River. The commission denied requests to retain excess earnings as to all the constructions authorized.

St. Louis Railway Club Elects Officers

W. Y. Brown, superintendent of car service of the St. Louis Terminal Railroad Assn., has been elected president of the St. Louis Railway Club. Other

The Value Of The Booster In Transporting Perishables

FRUIT growers throughout the country depend upon transportation to deliver their products in good condition to widely separated markets. "Soft-fruits" in particular present difficulties. They must not be damaged---train schedules must be kept to assure proper re-icing in transit.

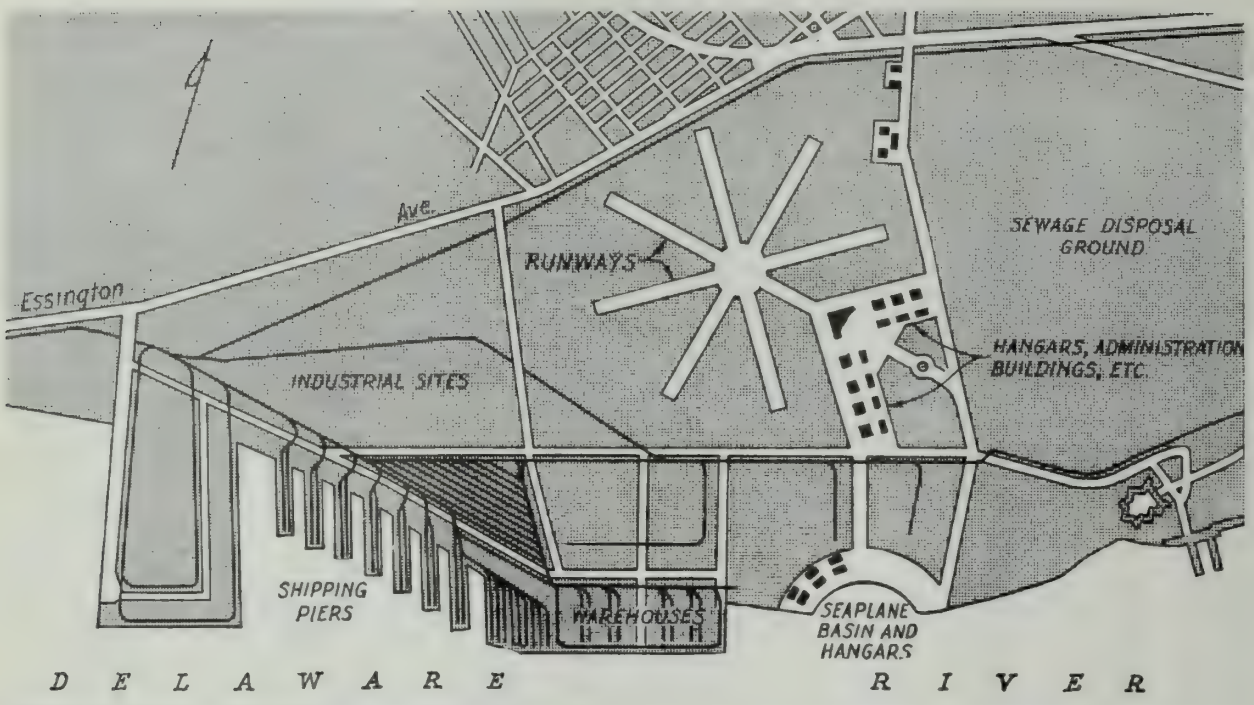
The Locomotive Booster has helped develop this service to a high state of efficiency. It helps start long freights without shock and damage to fruit. The added power speeds up transportation over heavy grades and helps bring such freight through on time.

The Booster serves the fruit-grower well and at the same time provides the railroads using it with low cost haulage per ton mile that makes this exacting service profitable.

The Locomotive Booster

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO
ST. LOUIS SAN FRANCISCO MONTREAL



Philadelphia's New Air-Rail-Ship Terminal Is to Cover 1,335 Acres, and Will Give Service to Every Form of Transportation.

officers for 1930 are: first vice president, W. E. Hicks, assistant to the manager of the department of personnel of the Missouri-Kansas-Texas; second vice president, J. W. Rea, general superintendent, Missouri Pacific; third vice president, M. F. Longwill, chief engineer, Wabash; secretary-treasurer, B. W. Frauenthal, general traffic agent, St. Louis Public Service Co., (re-elected).

N. P. Abandons Truck Plan

Plans of the Northern Pacific Railway for establishing an auxiliary freight truck service along its main line between St. Paul and Duluth have been abandoned for the time being as the result of adverse decisions by the Minnesota railroad and warehouse commission.

Air-Rail-Ship Terminal

Heralding an entirely new era in transportation, the new Philadelphia air-rail-ship terminal, now under way, will usher in a new chapter in efficient transportation, fusing the principal modes of travel into one common terminal, in contrast to the haphazard and circuitous methods of the past. Situated 20 minutes from the heart of the city, 1,335 acres will be devoted to serving airships, airplanes, seaplanes, zeppelins, railways and marine transport lines.

A square mile of land will be devoted to the airport proper. Lying back some 2,000 feet from the Delaware River, this will have four 4,000-foot runways, each 200 feet wide, permitting planes to land from eight directions. About 1,400 feet of the 14,000-foot water frontage will be used as a seaplane terminal, occupying a 70-acre tract southeast of the airport, the two ports connected by means of a taxicab strip to permit transfer of passengers and cargo. The remainder of the water front will be used for modern terminals, factories, etc., the entire area intervening between the wharves and airports to be used for railroad yards and factory sites. R. Harland Horton, Philadelphia engineer, made the plans for this triple terminal.

In transforming 200 acres of low land into "high land," six feet above high tide, it will be necessary to pump more than 4,000,000 cubic yards of river bed to make the fill. Two gigantic dredges will be kept going night and day for many months.

The airport is to be equipped with the usual administration buildings, waiting rooms, postoffice, hangars and other accoutrements, including repair shops to service air and seaplanes. To care for the latter type of craft it will be necessary to dredge out a large basin in a protected area of the water front. On the municipal sewerage acreage, near the terminal, facilities will be made available to service dirigibles, with a large mooring mast.

Facilities for railroads include connecting terminal to link the Pennsylvania, Reading, and Baltimore & Ohio systems. Two of the lines owned one trackage which was operated jointly during the war to the Hog Island plant, so this feature will be accomplished easily.

Revenue Loadings Decrease

Loading of revenue freight for the week ended on April 19 totaled 892,881 cars, the car service division of the American Railway Association announced April 30. This was a decrease of 18,429 cars under the preceding week and a reduction of 112,999 cars below the same week in 1929. It also was a reduction of 52,408 cars under the same week in 1928.

Miscellaneous freight loading for the week of April 19 totaled 377,917 cars, 38,378 cars below the same week in 1929 and 6,944 cars below the corresponding week in 1928. Loading of merchandise less than carload lot freight amounted to 249,470 cars, a reduction of 14,423 cars under the same week last year and 9,978 cars under the same week two years ago.

Grain and grain products loading for the week totaled 37,403 cars, an increase of 641 cars above the same week in 1929 but 2,192 cars below the same week in 1928. In the western districts alone, grain and grain products loading amounted to 24,372 cars, a decrease of 378 cars under the same week in 1929.

Live stock loading totaled 23,290 cars, 4,705 cars below the same week in 1929 and 4,281 cars below the corresponding week in 1928. In the western districts alone, live stock loading amounted to 18,731 cars, a decrease of 3,740 cars compared with the same week last year.

A MIRACLE

of Management!

"American railroads for six years have steadily increased profits without increasing revenues and in the face of steadily mounting wages and taxes. It sounds like a miracle. And so it is—a miracle of management."

—*The Business Week*

* * *

This noteworthy accomplishment was made possible by intensive operation of locomotives of high sustained boiler capacity—locomotives capable of hauling heavier trains at higher speeds.

High sustained boiler capacity is earning capacity.

This higher sustained boiler capacity is provided by Elesco superheater locomotives.

More than 56,000 locomotives are Elesco equipped. There is not a single important train that is not hauled by Elesco superheater power.

THE SUPERHEATER COMPANY

17 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Bldg.
CHICAGO

Canada: THE SUPERHEATER CO., Ltd.
Montreal

Superheaters
Feed Water Heaters

Exhaust Steam Injectors
Superheated Steam Pyrometers

A-389

All districts reported reductions in the total loading of all commodities compared with the same week in 1929 and all except the Southwestern, which showed a small increase, reported reductions under the same week in 1928.

Merger Plan Withdrawn

The last of the great independent plans for consolidation of railroads in eastern territory which has been submitted to the Interstate Commerce Commission was withdrawn May 3 when the Delaware & Hudson Company gave formal notice that it will no longer ask consideration of a petition it filed last year.

The Delaware & Hudson Company, which is a holding corporation not engaged in railroad operation, asked authority to acquire among others, the New Haven, the Boston & Maine, Reading, and Western Maryland systems, proposing to operate them all as a collection of terminal transportation agencies reaching the North Atlantic Coast, and serving equally all east and west trunk lines.

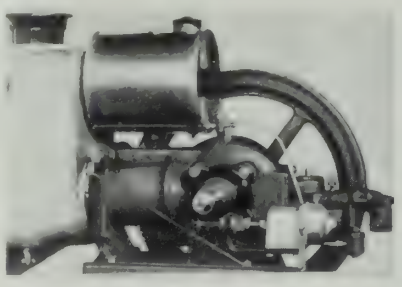
Down Goes the Net Operating Income

From figures available May 5 it was estimated that the March net operating income of the Class 1 railroads approximated $61,100,000, compared with $97,466,478 in March, 1929, a decrease of 37.3 per cent.

New Diesel Electric Car

A Diesel-electric rail car, which will have a maximum speed of about 70 miles an hour, will be delivered to the Great Northern Railroad about August 15 by the Westinghouse Electric & Mfg. Co. The generator, motor and other electrical equipment now are being manufactured at the Westinghouse plant at East Pittsburgh. The engine is under construction at the Westinghouse plant at South Philadelphia and the car body is being built by the St. Louis Car Co. The rail car will be divided into an engine compartment, a mail compartment and a baggage compartment. Its 400-horsepower engine will be powerful enough to haul two passenger coaches. The first car of this type used by an American railroad was sold by Westinghouse a little more than a year ago. Previously similar cars had been put into operation on Canadian roads.

Diesel engines burn a low grade of fuel oil and are very economical to operate. The car to be delivered to the Great Northern will use only one gallon of fuel every two or three miles.



Fairmont Type QC Engine With Flywheel and Timer Removed to Show Governor.

New Engine on Fairmont Mower

A ball bearing, volume governed engine, Type QC, is the leading new feature of 1930 Fairmont M24 track mowing machines. As shown in the illustration, the new governor is completely enclosed. The centrifugal fly-ball parts run in an oil bath, protected from dust and grit. The drive shaft and gears are similar to those used for magnetos on Fairmont engines during the past ten years, so durability has been well developed. This same design of governor is now in its fifth year of service on railroad pumping engines proving very satisfactory. Except for the governor installation, and omission of the sliding base, this new type QC mower engine is identical with the well known QB which has been standard on Fairmont section and extra gang motor cars for five years. Renewals of main working parts are thus available from already existing stocks used to service motor car engines.

Principal features of the QC engine are: three ball-bearings on crankshaft; Ringseald crankshaft packing; separate cylinder head; separate water jacket, one-piece sidebearings; one-piece crankcase; improved carburetor; improved timer; patented throttle. It develops from 6 to 11 h.p. at practical working speeds. On the mower proper, mechanical refinements have been made wherever service in 1928 and 1929 indicated their desirability. For instance, it is now easier to install endless cord belts. Extension handwheels are larger. Strength and durability have been increased where needed, and the new parts designed to fit earlier machines as well as the later models. M24 Mowers are manufactured by Fairmont Railway Motors, Inc., of Fairmont, Minn.

Another Sky Merger

A unified air mail and passenger route across the United States was assured April 23 when it was announced that a plan to acquire National Air Transport, Inc., by the United Aircraft and Transport Corpn. had been agreed upon by officials of the two corporations. Among the companies controlled are the Boeing Airplane Co., the Pratt & Whitney Aircraft Co., the Chance-Vought Corpn., Boeing Air Transport, Inc., Sikorsky Aviation Corpn., and Stout Air Services.

N.A.T. operates between New York and Chicago and from Chicago to Dallas, Tex., and other points in the Middle West.

Railway Construction

Tracks & Yards

ARIZONA.—The Santa Fe has let a contract to the Sharp & Fellows Contracting Co., Los Angeles, for a second main track between Winslow and Joseph City, 23 miles.

CALIFORNIA.—The Southern Pacific has permission to build an extension to its Sandia branch from Sandia to a connection with the Holton Inter-Urban Ry. at Holtville, 5.8 miles, and to operate over the Holton Inter-Urban from El Centro to Holtville, 9.85 miles. The extension will cost about $195,000.

OKLAHOMA.—The Frisco has asked permission to build a line from Cameron to the mine of the Tahona Smokeless Coal Co., 5.83 miles, and an extension of 2.95 miles from Shamrock to an oil refinery near Drumright.

OREGON.—The Oregon Electric Ry. Co. has permission to build a 41-mile extension from a point on its line between Albany and Conser to Cascadia, with three branch lines in Linn county, totaling 28 miles. The object is to provide a rail outlet for timber on the west slope of the Cascade Mountains. The Oregon Electric also received permission to operate over 12 miles of the Southern Pacific between Albany and Lebanon.

PENNSYLVANIA.—The Pennsylvania has let a contract to George W. Rockwell, Sunbury, Pa., for a bridge over Shamokin creek, and track changes south of Sunbury, to cost about $100,000. Another contract has been let to the Fritz-Rumer-Cooke Co., Columbus, for a subway under the company's

NEW ECONOMIES

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tracks about 0.9 miles south of Cokeburg Junction, to cost about $28,000.

TEXAS.—The Rock Island has permission to build a line from Vega to a point on its present line into Quay county, New Mexico, 76 miles. The Rock Island will build 26 miles of the line in New Mexico, and the Chicago Rock Island & Gulf will build the remaining 51 miles in Texas. The extension will serve a large agricultural area at present without railroad facilities.

—The Rock Island Lines and the Frisco Lines have permission to build 160 miles of new lines in the north central and the Panhandle districts of Texas. This will shorten the route from northern Texas and southwestern Oklahoma to Fort Worth and Dallas.

—The Texas Short Line has permission to build a line from Grand Saline southeast to Van, 11 miles, to cost about $370,000.

WEST VIRGINIA.—The Chesapeake & Ohio has been authorized to build a 19-mile extension in Raleigh county, between Edwight and Surveyer. The road will cost $3,592,470 and will tap a rich coal field.

Buildings & Structures

CALIFORNIA.—Stockton. The Southern Pacific is planning to build a brick passenger and freight station here to cost about $200,000.

CONNECTICUT.—New Haven. The Tredennick Construction Co., Boston, has started work on a two and a half story brick and concrete heating plant for the New Haven. The plant will contain four boilers. The building and equipment will cost about $500,000.

ILLINOIS.—Chicago. The Chicago & North Western has let a contract to the H. A. Peters & Co., Chicago, for a two-story brick office building at Wood street to cost about $35,000.

—Chicago. The Wabash is planning to build a two-story freight house at Plymouth court to cost about $60,000.

INDIANA. — Claypool. The Nickel Plate has let a contract to the Roberts & Schaefer Co., Chicago, for a 250-ton capacity, 3-track, reinforced concrete locomotive coaling plant here.

NEBRASKA.—Fairbury. The Union Pacific has let a contract to the Brown Engineering Co., Omaha, for a one-story and basement, concrete and brick passenger station to cost about $90,000.

—Omaha. The Union Pacific has let a contract to the Omaha Steel Works for supplying steel for the Seventh street grade separation structure. Company forces will be employed in the work, and the total cost will be about $147,000.

—Omaha. The Wabash is planning to build a 2,000,000-bu. grain elevator to cost about $500,000.

NEW MEXICO.—Las Vegas. The Santa Fe has let a contract to the Roberts & Schaefer Co., Chicago, for coaling and sanding facilities for servicing with coal, sand and water, at one spotting, main line locomotives, to be erected here.

NEW YORK.—Hamburg. The public service commission has approved the estimate of $295,000, exclusive of land and damages, to eliminate the Athol Springs highway crossing of the New York Central, the Pennsylvania, and the Nickel Plate.

—Valcour. The Delaware & Hudson has let a contract to Spellman & Oliver, Chateaugay, N. Y., to eliminate a grade crossing here to cost about $90,000.

OHIO. — Cincinnati. The Cincinnati, New Orleans & Texas Pacific has let a contract to the Mt. Vernon Bridge Co., Mt. Vernon, Ohio, for supplying and erecting the structural steel for an elevated freight line into the new union terminal here, to cost about $120,000.

PENNSYLVANIA.—Pittsburgh. The Pennsylvania has let a contract to W. F. Trumble & Sons Co., Pittsburgh, for an extension to the produce house at Sixteenth street, to cost about $157,000.

—Pittsburgh. The Pittsburgh & Lake Erie R. R. Co., a subsidiary of the New York Central Lines, has let a contract to the Roberts & Schaefer Co., Chicago, for an "N. & W." type electric engine coaler and cinder plant.

—Pittsburgh. The Baltimore & Ohio has let a contract to the Vang Construction Co. for track elevation work at Irvine street, to cost about $500,000.

—Hazelwood. The Baltimore & Ohio has let a contract to the Van Construction Co., Cumberland, Md., for a subway under the company's tracks to cost about $250,000.

WISCONSIN.—Milwaukee. The Chicago & North Western has let a contract to the Edward E. Gillen Co., Milwaukee, for driving foundation piles for an addition to the Kinnickinnic grain elevator. The addition will have a capacity of 2,000,000 bu. Total cost of construction will be $500,000.

—Green Bay. The Milwaukee has let a contract to Peppard & Fulton, Minneapolis, for an automobile unloading dock and house, to cost about $250,000.

—Superior. The Great Northern has let a contract to the Burrell Engineering Co., Chicago, for a 3,000,000-bu. addition to the grain elevator here.

The Great Northern has awarded a contract to the Roberts & Schaefer Co., Chicago, for five "N. & W." type electric cinder plants, two of them for multiple track operation, to be erected at Williston, N. D., and Brockton, Glasgow, Wagner and Helena, Mont.

Bus Orders

The half-million dollar purchase of the Gulf Refining Co. of Pittsburgh, Pa., is the largest individual order for truck equipment in 1930. The order was placed with the White Company of Cleveland and calls for 100 buses of various models. This will increase the Gulf Refining Co.'s truck fleet to 2,336 Whites, the largest standardized fleet in the world.

Other recent orders and deliveries of the White Company include the following bus equipment: Eight model 65 Denver Tramway Corpn.; one Model 54, Lewiston Transportation Co., of Lewistown, Pa.; three model 54, Los Angeles Railway Corpn.; four model 50B, Middlesex & Boston Street Railway; four model 65A, Montreal Tramways; nine model 53, Pernambuco Tramways & Power Company; four model 53, Rio Forca Nordeste De Brazil, and one model 54, Super Power Co. of Springfield, Ill. Twin Coach Co.'s recent orders and deliveries were: One urban and ten 40-passenger, metropolitan type coaches, Boston Elevated; three parlor recliner coaches, and two urban motor coaches, Milwaukee Electric Railway & Light Co.; one urban coach, Portland Electric Co.; two 40-passenger motor coaches, San Diego Electric Railway, and nine urban coaches for the Youngstown Municipal Railway.

Orders and deliveries from the American Car and Foundry Motor Co. include one 40-passenger bus for the San Diego Electric Railway; three chassis of 264-inch wheelbase and eight chassis of 240-inch wheelbase, with Newell bodies, inter-city type, for the North Coast Transportation Co. of Seattle; Detroit Department of Street Railways has accepted this company's low bid for 35 to 50 motor coaches.

Deliveries made by General Motors Truck Co.: Six intercity, type Y, coaches, Dayton & Columbus Transport Co., Springfield, Ohio; one type W observation coach, city council of Detroit; four type Z coaches for Toronto transportation commission, Toronto, Ont.; three type W, city service, coaches, Potomac Edison Co.; five type U, city service, yellow coaches, Oklahoma Railways, Oklahoma City; 12 type W, city service, coaches, London Street Railways, London, Ontario; one type U, city service, yellow coach, Beaver Valley Motor Coach Co.; five type U, city service, units, Fort Madison Street Railways; and 20 motor coaches for People's Transit Co.

Mack International orders and deliveries include one model BC, 29-passen-

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ger, city bus, Allentown & Reading Transit Co., of Reading, Pa.; one of the same type, Canton Motor Coach Co., of Canton, Ohio; four model BC, 25-passenger, city buses for F. N. Carpenter, North Tonawanda, N. Y.; one model AB, 17-passenger, combination passenger and express bus, Central of Georgia Railway Co., Savannah, Ga.; ten model MBC, 29-passenger, city buses, Cincinnati Street Railway; five model BC, 29-passenger buses, Connecticut Co.; one model AB, 29-passenger, city bus for I. S. Hendrickson, of Bayville, L. I.; two model BC, parlor car buses for the Inter-Carolina Motor Bus Co., of Atlanta; ten model AB, 25-passenger, city type, buses, Iowa Southern Utilities Co. of Centerville, Ia.; one model AB, 29-passenger, city type, bus, Mack Truck Co. of Canada, Ltd.; three model AB, 25-passenger, city type buses, Murco Corpn., New York; one BK, 265-inch, bus chassis for the Pretz-Sticks Baking Co., of Myerstown, Pa.; one model BK, 40-passenger, city type bus, and one model BK, 29-passenger, city bus for the Public Service Coordinated Transport of New Jersey; 15 model AB, 230½-inch bus chassis for Tomas & Cia, Boston, and one model AB, 231¼-inch, bus chassis for the Troy Fifth Avenue Bus Co., Troy, N. Y.

Passenger Car Orders

Passenger car inquiries since the April issue include these: The Erie R.R. for five 70-foot express cars; the Reading Co. for ten 70-foot baggage cars; three dining cars for the M-K-T Lines; the Minneapolis & St. Louis for rail motor cars by permission of the federal court as previously reported. The Transit Commission has ordered the Long Island R.R., to purchase 100 new multiple-unit passenger cars with seating capacity of 80, to be ready not later than June 15, 1931. This is in addition to the purchase of the 85 passenger cars which the company has promised to have in service before the end of 1930. The North Shore Lines is reported in the market for 25 high-speed interurban cars; and the South Shore Lines will purchase 20 similar units very soon.

Recent street car orders include several outstanding purchases: United Railways & Electric Co., of Baltimore, has divided a $2,000,000 order for new front entrance, center exit, single-end cars between the J. G. Brill Co. and the Cincinnati Car Co., an order for 100 going to the former and the balance to the latter; J. G. Brill will build 50 new-type cars for the Brooklyn & Queens Rapid Transit Co.; Detroit Street Ry. Commission has purchased 130 new street cars at $13,400 each for the Detroit Street Car Co., from the St. Louis Car Co.; Chicago, North Shore & Milwaukee has ordered 25 passenger motor cars for $850,000 from the Standard Steel Car Co.; St. Louis Car Co. was scheduled to make April delivery of ten 2-car train, 122-passenger, bodies to the Milwaukee Electric Ry. & Light Co.; Cincinnati Car Co. will deliver ten double-end, double-truck street cars to the Northern Indiana Ry. Co. this month; Yakima Valley Transportation Co., of Yakima, Wash., has purchased three type D.E.D.T., 40-passenger, motor cars, the bodies being built by the American Car Co., and the mechanical equipment by J. G. Brill Co. The Central Railroad of New Jersey has ordered 25 passenger cars, and five combination passenger and baggage cars from the Pressed Steel Car Co.

Locomotive Orders

Class 1 railroads on April 1 had 8 274 locomotives in need of repair or 14.8 per cent of the number on line, according to the latest bulletin of reports filed by the carriers with the car service division of the American Railway Association. This was a decrease of 383 as compared with the number

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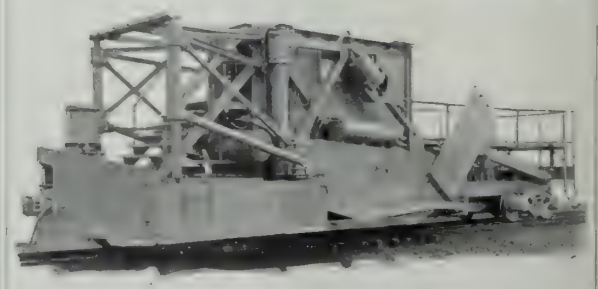

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AT

MADRID, SPAIN

May 5-15

INTERNAT. RY. CONGRESS

(Meets every 5 years)

Our president, Harold A. Smith, U.S. State department delegate in attendance will report this important meeting in our June issue.

AT

SAN FRANCISCO

June 23-26

AMERICAN ELEC. RY. ASSN.

Business meeting followed by delegates visit to Los Angeles as guests of Pacific Electric Railway and Los Angeles Railway Company.

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needing repair on March 15 at which time there were 8,657 or 15.4 per cent. Locomotives in need of classified repairs on April 1 totaled 4,595 or 8.2 per cent, a decrease of 243 compared with March 15, while 3,679 or 6.6 per cent were in need of running repairs, a decrease of 140 under the number in need of such repair on March 15. Class 1 railroads on April 1 had 7,247 serviceable locomotives in storage compared with 6,910 on March 15.

Locomotive inquiries since the April issue of *Transportation* are as follows. The Cumberland & Pennsylvania, one 2-8-0; New York, New Haven & Hartford, ten electric locomotives; Indianapolis Union Ry. will buy four switching engines; Chicago & North Western, 15 locomotives; Illinois Central System has changed its inquiry for oil-electric locomotives from nine to six. Baldwin has received orders for four locomotives from the Baltimore & Ohio and two from the Illinois Central. Orders placed with the American include three Pacific type for the Chicago, St. Paul, Minneapolis & Omaha; two 8-wheeled switchers for the Aliquippa & Southern, and a similar order for the Aliquippa General American Tank Car Corpn.

Freight Car Orders

The car service division of the American Railway Association reports that on April 23 Class I railroads had 439,371 surplus freight cars in good repair and immediately available for service. This was a decrease of 6,760 cars compared with April 15, at which time there were 446,131 cars. Surplus coal cars April 23 totaled 183,030, a decrease of 7,132 cars within a week. Surplus box cars totaled 200,503, a decrease of 976 for the same period. Reports also showed there were 28,798 stock cars, an increase of 941 over the number reported on April 15, while surplus refrigerator cars totaled 14,743, an increase of 603 for the same period.

Inquiries for freight car equipment are as follows: Minneapolis & St. Louis is reported inquiring for 500 single sheathed 40-ton box cars; National Tube Co. is inquiring for six 50-ton ore cars; Warrior River Terminal, New Orleans, for 65 mill-type gondolas of 70 tons; Wheeling Steel Corpn., for 12 all-steel flat cars; Fruit Growers' Express, for 366 underframes; Erie R.R. Co., for 150 convertible 70-ton ballast cars; Amtorg Trading Co., for 50 air dump cars; Aluminum Company of America, for 20 hopper cars, and Wilson & Co. for 150 to 300 refrigerator cars.

Freight car orders placed since the April issue include: One 75-foot gas-electric car for Sperry rail fissure detector from the J. G. Brill Company by the New York Central Lines; 25 cabooses from Magor Car Co. by the Erie R.R.; 15 coke cars, 40 tons capacity, from Standard Steel Car Co., by the New Haven system; 100 hopper cars from the General American Car Corpn., by the M-K-T Lines; 15 double-end, all-steel, motor freight cars, of 80,000 lbs. capacity, delivered by the Cincinnati Car Corpn., to the Cincinnati & Lake Erie R.R. of Dayton, Ohio; 300 steel underframes from the Bettendorf Co. by the Union Pacific System for flat cars to be built in its own shop; 250 stock cars from the Ryan Car Co., by the Northern Pacific; 100 gondolas, 100 drop-side cars, and 600 containers, from Standard Steel Car Co., by the L.C.L. Corpn.; ten air-dump 30-ton cars from Koppel Industrial Car & Equipment Co., by the Oliver Mining Co.; 125 box cars from the Bettendorf Co., by the Green Bay & Western R.R.; 14 dump cars of 30 yards capacity, from Koppel Industrial Car & Equipment Co., by the Inland Lime & Stone Co.; 100 tank cars from the General American Tank Car Corpn., by the Cities Service Tank Line.

Changes in Personnel

Executive & Operating

Patrick H. Joyce, president of the Standard Steel Car Corpn., Chicago, has been elected chairman of the executive committee of the Chicago Great Western. Mr. Joyce succeeds **Bernard E. Sunny,** who was elected chairman of the board, the position left vacant by the death of **Samuel M. Felton. John W. O'Leary,** president of the National Bank of the Republic, Chicago, was elected vice chairman of the board.

Frederick W. Brown, assistant general manager of the Atlantic Coast Line with headquarters at Wilmington, N. C., has been appointed director of transportation in charge of freight and passenger service. **C. G. Sibley,** general superintendent at Rocky Mount, N. C., succeeds Mr. Brown. **O. H. Page,** superintendent of transportation at Jacksonville, succeeds Mr. Sibley. **F. B. Langley,** district superintendent at Ocala, Fla., succeeds Mr. Page. **F. A. Hansard** succeeds Mr. Langley at Ocala.

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Erie Railroad
Great Northern Railway
Illinois Central Railroad
Lehigh Valley Railroad
Louisville & Nashville Railroad
Missouri Pacific Railroad
Mobile & Ohio Railroad
Pennsylvania Railroad
Pittsburgh & Shawmut Railroad
Reading Company
Rutland Railroad
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Southern Railway
Terminal Railroad Assoc. of St. Louis
Union Pacific Railroad
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James Keeley, assistant to the president of the Pullman Company with headquarters at Chicago, has been elected a vice president of the company.

C. P. Couch has been elected executive vice president of the Louisiana & Arkansas and Louisiana, Arkansas & Texas, with headquarters at Shreveport, La.

S. W. Fairweather, assistant director of the department of economics of the Canadian National, has been appointed director of the bureau of economics.

W. C. Owens, superintendent of the Canadian National at Winnipeg, has been appointed superintendent of freight service with headquarters at Montreal, succeeding **G. N. Goad,** who was appointed acting chief of car service last December on the death of Fred Price. **W. J. Donally,** assistant superintendent at Brantford, Ont., succeeds Mr. Owens. **E. W. Cameron,** assistant supterintendent at Moose Jaw, Sask., has been transferred to Brantford. **W. J. McNabb,** general yardmaster at Port Arthur, Ont., succeeds Mr. Cameron. **I. A. Macpherson,** superintendent at Saskatoon, Sask., has been appointed superintendent at Regina, Sask. **D. W. Steeper,** superintendent at Melville, Sask., succeeds Mr. Macpherson. **J. J. Napier,** superintendent at Brandon, Man., succeeds Mr. Steeper. **J. A. Rogers,** assistant superintendent at Saskatoon, has been appointed superintendent at Prince Albert. **C. H. Brown,** assistant superintendent at Edmonton, Alta., succeeds Mr. Rogers. **G. H. Linney,** assistant superintendent at North Battleford, Sask., succeeds Mr. Brown. **P. G. Russell,** assistant superintendent at Smithers, B. C., succeeds Mr. Linney.

Blank & Stoller.

H. T. Newcomb

W. C. Beck, assistant superintendent of the Canadian Pacific at Brownville Junction, Maine, has been transferred to the Laurentian division with headquarters at Three Rivers, Que., succeeding **G. A. Bowler,** transferred.

J. C. Rankine, superintendent of telegraph of the Great Northern with headquarters at St. Paul, has been appointed assistant to the vice president in charge of operation, succeeding **J. A. Cochrane,** granted leave of absence. **A. W. McKay,** assistant superintendent of telegraph at Spokane, succeeds Mr. Rankine.

J. A. Moran, superintendent of the River division of the Frisco Lines at Chaffee, Mo., has been transferred to the eastern division, with headquarters at Springfield, Mo., succeeding **E. L. Magers,** resigned. **J. S. McMillan,** assistant superintendent of the River division at Chaffee, succeeds Mr. Moran.

J. F. Grodzki, general safety agent of the Union Pacific at Portland, has been appointed scale inspector with the same headquarters.

Financial & Legal

H. T. Newcomb, general counsel of the Delaware & Hudson with headquarters at New York, has also been appointed vice president with jurisdiction over the law department. Mr. Newcomb was born January 4, 1867, at Owosso, Mich., was educated in the

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public schools and at Columbian University, and began his career in the accounting department of the Milwaukee. He joined the Interstate Commerce Commission later, where he was employed from 1888 to 1895. Mr. Newcomb was head of the transportation section in the United States department of agriculture from 1895 to 1899, and for two years with the division of agriculture of the twelfth United States Census. In 1901 he resigned from federal service and became editor of the Railway World. He began to practice law in 1902, and in 1907 organized the law firm of Newcomb, Churchill & Frey in Washington. He went to New York in 1916, and after five years' general practice was appointed general solicitor of the Delaware & Hudson. He was appointed general counsel in 1926.

The Pennsylvania announces the appointment of **James H. Cheston** as assistant general solicitor, succeeding **James E. Gowen,** who resigned to become vice president of the Philadelphia Saving Fund Society. Mr. Cheston was formerly assistant general solicitor of the Norfolk & Western.

A. J. Berta, assistant treasurer of the Illinois Terminal System, has been appointed treasurer with headquarters at Chicago.

R. D. Murray, assistant auditor of disbursements of the Big Four with headquarters at Cincinnati, has been appointed auditor of disbursements with the same headquarters.

V. L. Thompson, chief clerk to the president of the Gulf, Mobile & Northern, has been appointed secretary of that road and assistant secretary of the New Orleans Great Northern with headquarters at Mobile. As secretary of the Gulf, Mobile & Northern, Mr. Thompson succeeds **R. F. Brown,** who continues as vice president with headquarters in New York. **E. A. Reynolds,** auditor of receipts of the Gulf, Mobile & Northern and the New Orleans Great Northern with headquarters at Mobile, has resigned.

W. S. Ure, auditor of miscellaneous accounts of the Oregon Short Line of the Union Pacific System, has been appointed assistant treasurer with headquarters at Salt Lake City, succeeding **C. H. Jenkinson,** retired. **E. B. Conrad,** auditor of freight accounts, succeeds Mr. Ure. **R. Wipprecht,** auditor of disbursements, succeeds Mr. Conrad. **F. J. Krecek** succeeds Mr. Wipprecht.

A. S. Pierce, treasurer and assistant secretary of the Chicago & North Western with headquarters at New York, has been elected vice president and assistant secretary succeeding S. A. Lynde, retired.

Purchases & Stores

The Pennsylvania announces that **A. E. Owen,** assistant purchasing agent with headquarters at Chicago, has been transferred to Philadelphia, succeeding **W. N. Kuhn,** appointed assistant fuel purchasing agent with the same headquarters. Mr. Kuhn succeeds **George H. Schultz,** appointed assistant purchasing agent with headquarters at Chicago.

W. J. Kelleher, division storekeeper of the Illinois Central at New Orleans, has retired after 33 years in the service of that road. The jurisdiction of **C. B. Sauls,** division storekeeper at McComb, Miss., will include all material handled by the New Orleans storehouse. The position of division storekeeper at this point is abolished.

H. P. Buchenery, division storekeeper of the Southern Pacific at Tucson, has been appointed stationery storekeeper at West Oakland, Cal., succeeding **V. R. Plank,** deceased.

M. E. Baile, district storekeeper of the Missouri Pacific at St. Louis, has been appointed assistant supply agent with the same headquarters. **Charles Williams** succeeds Mr. Baile.

J. J. Jirousek has been appointed storekeeper of the Burlington at Grand Crossing, Wis., succeeding **J. R. Hunter,** assigned to other duties.

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Traffic

N. R. Des Brisay, general passenger agent of the Kettle Valley and the Canadian Pacific with headquarters at Vancouver, has been appointed assistant passenger traffic manager of the western lines of the Canadian Pacific with headquarters at Winnipeg. Mr. Des Brisay succeeds **C. E. McPherson,** who has retired from active duty but will serve in an advisory capacity. **H. W. Brodie,** assistant passenger traffic manager of the eastern lines at Montreal, has been appointed overseas traffic manager with the same headquarters. **R. G. McNeillie,** general passenger agent at Winnipeg, succeeds Mr. Brodie. **H. R. Mathewson,** general passenger agent at Toronto, succeeds Mr. McNeillie. **E. L. F. Sturdee,** assistant general passenger agent at Montreal, has been appointed general passenger agent at Vancouver. **George E. Carter,** district passenger agent at St. John, N. B., succeeds Mr. Sturdee.

C. W. Wells, chief of tariff bureau of the Atlantic and Central regions of the Canadian National with headquarters at Montreal, has been appointed assistant general freight agent in charge of rates and tariffs, lines, Port William and east, Armstrong and west. **J. A. Argo** succeeds Mr. Wells.

W. M. MacPherson, assistant general freight agent of the Delaware, Lackawanna & Western at Buffalo, has been appointed assistant freight traffic manager with the same headquarters. The position of assistant general freight agent has been abolished.

S. A. Smith, assistant to the vice president of the Central of Georgia, **A. W. Sanders,** and **M. W. Thomas** have been appointed assistant general freight agents, with headquarters at Savannah.

The Southern Railway has appointed **C. M. Tyler** assistant freight traffic manager with headquarters at Jacksonville.

J. A. Gorman, chief of the tariff bureau of the Illinois Terminal System, has been appointed general freight agent with headquarters at St. Louis, succeeding **W. H. Blair,** resigned.

A. C. Thompson has been appointed assistant general passenger agent of the Big Four with headquarters at Cincinnati.

C. Davis has been appointed assistant general freight agent of the Santa Fe with headquarters at Topeka.

The Atlantic Coast Line has appointed **W. H. Howard,** general passenger agent with headquarters at Wilmington, N. C.

Gilbert J. White, city freight agent of the Erie at Memphis, has been appointed general agent of the Boston & Maine at Memphis, succeeding **H. H. Schutt,** deceased.

The resignation of **Henry W. Conner,** eastern traffic manager, TAT-Maddux Air Lines, effective May 1, is announced. Mr. Conner, who has been in charge of traffic in the eastern region since the beginning of the air line service last July, will return to the public utility field in Chicago. The territory under Mr. Conner's jurisdiction will be consolidated with the eastern division of TAT-Maddux and placed under the jurisdiction of **J. W. Brennan,** traffic manager, with headquarters at St. Louis.

Mechanical

The Northern Pacific announces the following changes in personnel: **R. P. Blake,** master mechanic, Idaho division, Parkwater, Wash., transferred to the Tacoma division with headquarters at Tacoma; **J. A. Marshall,** master mechanic of the Yellowstone division at Glendive, Mont., succeeds Mr. Blake; **W. D. Gouchenour,** master mechanic of the Rocky Mountain division at Missoula, Mont., succeeds Mr. Marshall; **G. L. Ernstrom,** master mechanic of the Pasco division at Pasco, Wash., succeeds Mr. Gouchenour; **M. A. Daly,** general fuel supervisor at St. Paul, has been appointed master mechanic of the

FARM HORSES AND IRON HORSES

It is a fact that the average acreage of improved land per farm worker increased from 32 to 44 acres between 1870 and 1925.

In the same period the number of hours of farm labor required to produce 10 bushels of wheat was reduced from 30 hours to 9 hours; and the value of farm machinery increased from $36 to $200 per farm worker. Since 1910 the number of horses on farms decreased 6,000,000 and their value per head decreased $38.

It is also a fact that in the last twenty years the average tractive power of Southern Pacific locomotives has more than doubled. Since 1910 the tractive power of its largest iron horse increased from 85,040 to 112,760 pounds. It costs more and more to buy an iron horse but as he grows stronger he works more efficiently and his up-keep decreases.

Farms and locomotives are becoming bigger and better because the pressure of the same economic forces require more economical production of farm products and transportation.

Southern Pacific

Pasco division, succeeding Mr. Ernstrom.

E. R. Battley, superintendent of motive power of the Canadian National at Montreal, has been appointed assistant general superintendent of motive power and car department, with headquarters at Toronto. **J. H. McAlpine,** superintendent of motive power and car equipment at North Bay, Ont., succeeds Mr. Battley.

C. M. Darden, assistant superintendent of machinery of the Nashville, Chattanooga & St. Louis at Nashville, has been appointed superintendent of machinery with the same headquarters, succeeding **J. J. Sullivan,** retired.

E. A. Murphy has been appointed power supervisor of the M.-K.-T. Lines with headquarters at Dallas, succeeding **S. H. Barnes,** deceased.

W. P. Bickley, assistant master mechanic on the Pennsylvania with headquarters at Altoona, has been appointed master mechanic of the Buffalo division at Olean, N. Y.

J. W. Surles, superintendent of shops of the Frisco Lines at Springfield, Mo., has been appointed assistant superintendent of motive power with the same headquarters, succeeding **P. O. Wood,** deceased.

The Burlington announces that **C. E. Plott** has been appointed master mechanic of the Centerville division with headquarters at Centerville, Iowa, succeeding **J. C. Climo,** retired.

Civil

G. O. Long, assistant division engineer on the Pennsylvania at Fort Wayne, Ind., has been appointed division engineer at Indianapolis, succeeding **G. H. Schlotterer,** transferred to Toledo. Mr. Schlotterer succeeds **H. W. Brown,** transferred to the office of the chief engineer, maintenance of way, western region, at Chicago. **F. G. Church,** supervisor of track at Wooster, Ohio, succeeds Mr. Long.

W. Claus, engineer maintenance of way of the Cumberland & Pennsylvania with headquarters at Cumberland, Md., has been appointed general manager. **R. R. Tiley** succeeds Mr. Claus.

L. S. Daynes, division engineer in the western region of the Canadian National at Prince Albert, Sask., has been transferred to Kamloops, B. C. **W. E. Rivers,** division engineer at Edson, Alta., succeeds Mr. Daynes.

A. H. Woerner, division engineer maintenance of way of the Baltimore & Ohio at Washington, Ind., has been transferred to the Chicago division at Garrett, Ind., succeeding **F. D. Batchellor,** transferred to the Newark division at Newark, Ohio. Mr. Batchellor replaces **R. W. Gabriel,** transferred to the St. Louis division, succeeding Mr. Woerner.

W. Fields, office engineer of the Gulf Coast Lines and the International Great Northern with headquarters at Houston, has been appointed division engineer of the International Great Northern at San Antonio.

The Colombian government has appointed **W. C. Frehse,** Jefe de Comision de Trazados, (chief of location), of the Ferrocarril de Carare, with headquarters at Tunja, Boyaca, Colombia. Mr. Frehse was formerly valuation engineer on the Canadian National, and on the engineering staff of the Soo Line. He has been engaged in construction work in Colombia for the past four years.

Obituary

William A. Whitney, retired lumber man and former Southern Pacific executive, died unexpectedly at San Francisco, April 17, aged 68. Mr. Whitney was born in Sacramento. He began railroading as a boy of 15 when he went to work as a telegraph operator for the Union Pacific at Cheyenne. He went to

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San Francisco in 1909 as superintendent of the western division of the Southern Pacific and three years later was transferred to Sacramento. He left the Southern Pacific 12 years ago and became connected with the Oregon Short Line and the Ogden-Logan-Utah R.R. Co. He retired in 1927.

Morris B. Brewster, president and general manager of Morris B. Brewster, Inc., died in Chicago, April 14, aged 56.

Robert J. Davidson, treasurer of the Ramapo Ajax Corpn., New York, died at Daytona Beach, April 3, aged 79.

Ralph H. Wallace, retired passenger traffic manager of the Erie, died at his home in Montclair, N. J., April 5, aged 71. Mr. Wallace retired in 1927 after 53 years in the service of the Erie.

H. J. Jackson, assistant treasurer and general freight and passenger agent of the New Jersey, Indiana & Illinois, with headquarters at South Bend, died April 11, aged 61.

C. H. Norwood, president of the Norwood-Noonan Co., Chicago, died in that city April 12, aged 55.

Charles Selden, general inspector of transportation of the Baltimore & Ohio, died at the Union Memorial Hospital, Baltimore, May 2, aged 81. Mr. Selden was a life-long friend of Thomas A. Edison, having worked with the inventor in the same telegraph office in his youth. He was born in Cincinnati, and began his railroad career in 1866 as an operator on the Cincinnati & Indianapolis Junction Railroad, a subsidiary of the former Cincinnati, Hamilton & Dayton Ry.

Supply Trade Notes

Vice President Saunders Jones announces the appointment of **George F. Russell** as sales manager of the **White Company** of Cleveland. Mr. Russell's headquarters will be at the company's home office in Cleveland, and for the present he will continue as vice president of the central region. **F. E. Triebner,** district manager at Pittsburgh, has been appointed acting regional manager for the central region with headquarters at Cleveland. **R. L. Fullerton** has been appointed acting district manager at Pittsburgh.

Wilfred Sykes, assistant general superintendent of the Indiana Harbor works of the **Inland Steel Co.,** has been appointed assistant to the president in charge of operations with headquarters at Chicago, succeeding **David P. Thompson,** deceased. **Frederick M. Gillies** succeeds Mr. Sykes. **James H. Walsh,** general superintendent of the Indiana Harbor works, has been appointed works manager. **Henry R. DeHoll** succeeds Mr. Walsh.

The United States Chain & Forging Co., Pittsburgh, has made the following changes in personnel: **L. A. Gerber,** western district sales manager, to be general sales manager; **W. L. Reilly,** assistant general sales manager; **L. K. Robinson** in charge of New England sales to eastern district manager, with headquarters at New York. **Harley Morris** has been appointed western district manager with headquarters at Chicago.

The Roberts & Schaefer Co., engineers and contractors, Wrigley Bldg., Chicago, announces that the business it closed in March had an average increase of 223 per cent over that for either of the two previous months.

The Reading Chain & Block Corpn. has appointed **R. G. Elliott,** representative in Connecticut with headquarters at 631 Chapel street, New Haven.

L. C. Ritterbush has been appointed resident engineer, eastern district of the **Union Switch & Signal Co.,** with headquarters at 150 Broadway, New York.

The Ashton Valve Co., Boston, has appointed **Edward C. Kenyon** representative in the railroad department of the Chicago office.

Daniel B. McCarthy, sales agent of the **American Car & Foundry Co.** at St. Louis, has resigned to become vice presi-

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dent of the **Quaker City Tank Line, Inc.**, with the same headquarters.

Samuel S. Demarest has been appointed manager of railway sales in the east, of the **Detroit Graphite Co.**, with headquarters in the Chrysler Bldg., New York.

Morley S. Sloman, representative of the **Sullivan Machinery Co.**, Pittsburgh, has been appointed manager of the Huntington, W. Va., branch, succeeding **John S. Walker, Jr.**, retired.

A. H. Weston, manager, Reading specialty division of the **American Chain Co.**, has resigned and is now associated with the **Reliance Manufacturing Co.**, Massillon, Ohio, with headquarters at 258 Broadway, New York.

J. A. Leiendecker, pole line material specialist of the **General Electric Supply Corpn.**, has resigned and joined the **National Lumber & Creosoting Co.**, with headquarters at Dallas. Mr. Leiendecker will specialize in pole sales and other creosoted timber products.

The Electric Railweld Sales Corpn., Chicago, has created a new division to reclaim frogs, switches, and crossings, in or out of track. The division will be in charge of **C. O. Hunt**, formerly with the **Ramapo Ajax Corpn.**

The Lincoln Electric Co., Cleveland, has opened three new offices: 338 Barnard street, Saginaw, Mich., **J. D. Luter** in charge; 225 E. Columbia street, Ft. Wayne, **D. H. Carver** in charge; Oil City, Pa., **E. D. Anderson** in charge.

The Ramapo Foundry & Wheel Works has moved its New York office from 29 Broadway to 9 Park Place.

The Lundie Engineering Corpn. has moved its Chicago office from 166 West Jackson boulevard to the Buckingham Bldg., 59 East Van Buren street.

The Railroad Accessories Corpn. has moved its New York office from 415 Lexington avenue to the Chrysler Bldg., Lexington avenue at Forty-second street.

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Transportation

(Reg. U. S. Patent Office)

The National Monthly
of the Transportation Industry

Vol. VI

No. 6

FEATURES *for June,* 1930

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Meetings in June

PASSENGER business for the railroads certainly will be large this month, but revenue will show little increase. Big conventions will be in session on both coasts, east and west, and in the middle states. Most of these gatherings were enumerated here in May, but for the convenience of readers the information is repeated.

The first of the national meetings will be that of Division VII, A.R.A., Freight Claims, June 10-13, at Seattle, and the second the American Association of Railroad Superintendents at Minneapolis, June 16-19. The Freight Station Section of the A.R.A., is to meet June 17-20 at Louisville, and the Protective Section June 17-19 at Buffalo. The Safety Section convenes at Denver June 24-26.

A semi-yearly meeting of the Association of Electrical Engineers is to be held June 18 at the Hotel Dennis, Atlantic City.

The American Railway Development Association meets at Duluth June 18-20, and Division VIII, A.R.A., Motor Transit, June 18-20, at Atlantic City.

The two principal railroad conventions, Divisions V and VI, at Atlantic City, the first one June 18-25 and the second for June 18-20, will be the outstanding events of the month. They are referred to elsewhere in this edition.

San Francisco and Los Angeles have made special arrangements for the big meeting of the American Electric Railway Association, June 23-26, at the former city, and at the latter city after adjournment. The A.E.R.A has not been seen on the Pacific Coast for fifteen years.

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The Meeting in Madrid

By

H. A. Smith

U. S. Delegate
International
Railway
Congress

Avenue Pi y Margall, the Fifth Avenue of Madrid.

BULL FIGHTS, pesetas, la senado, senoras and pelota, all in confusion, all going on day after day and at unusual hours, offered many problems, pleasures, and struggles for twenty-seven Americans and five Canadians who, with their wives, daughters and sons, withstood the rigors of Spanish hours, white asparagus, and wild strawberries, drowned in Spanish wine, from May 5 to 15, while they attended the eleventh session of the International Railway Congress at Madrid, Spain.

At 4 o'clock May 5, H. M. King Alfonso XIII, accompanied by the Duke of Miranda, arrived at the Palace of the Senate. His Majesty was received by the Spanish executive committee, and the president presented the chairman of the permanent commission. Mr. Foulon, and the secretary, Mr. Ghilain. In the office of the president several other members of the commission were presented to the king. At 4:20 the king entered the senate which was crowded with delegates, many members of the diplomatic corps occupying the special box reserved for them. The king was received with loud cheers as he took over the presidency, having on his right the prime minister, General Berenguer; Mr. Foulon and the director of public works, Señor Martinez Acacio, and on his left Señor Matos, minister of fomento; Señor Gaytan de Ayala and Señor Boix. Seated to the right of the tribune were the members of the executive committee and to the left the general secretaries. At the back were seated the members of the permanent commission and the leading delegates of the various governments represented.

H. M. the King opened the meeting and called upon the minister of fomento, Señor Matos, who said in part:

"What is the object of this international congress? Railways: Railways mean transport, transport of ideas, of goods, of initiatives, of persons; all for the purpose of uniting in the pursuance of a common object.

"This congress did not come into existence until today when it was opened by His Majesty. Nor will it come to a close when it is adjourned. It will continue to live, because it will continue to inspire all members with a desire to continue the work with the realization of the well-being not merely of any one station, but the well-being of humanity and the progress of humanity. And I fervently desire that the powerful pursuits

Cibeles Square and Alcala Street, Madrid.

which this congress represents will lead to the conclusion of permanent friendships.

"In the name of the government, I welcome all the members. Spain's accomplishments in the railway field are known to everybody. The constant object of all the governments which have succeeded one another has always been the improvement of existing railways and the creation of new elements of transport, new elements of life, and we all have before us similar efforts made by other nations.

"I trust that when the moment comes when we shall have to bid farewell to one another, when we shall have to return to our own countries to resume the duties that we have to fulfill, we shall feel that cordial and permanent friendships have been concluded. I trust that every one of you will take back to his country pleasant remembrances of Spain and a feeling of having experienced loving hospitality in the country."

The president of the congress, after thanking the Spanish people for their courtesy in welcoming the delegates, said the International Railway Congress was founded in Belgium in 1885. Its development and activity had continued to increase with astonishing rapidity. At its foundation it comprised 19 governments, 131 administrations, and represented 31,250 miles of railways in working order. In 1920 the affiliated railway lines had reached a total of 245,250 miles. Today there form part of the association 42 governments and 230 administrations working 387,500 miles of railway line, which proves the universal interest aroused in its labors. Railway industry problems, he said, form the subject, throughout the whole world, of the serious consideration and study of front rank technical experts. The congress enables qualified specialists to compare the results of their experience and to discover in an atmosphere of confidence and competence what new progress can be made in the different domains. He continued:

"Among the questions on the agenda of the present session, I shall quote the following, in order of importance:

"1.—The use of concrete and reinforced concrete for railways;

"2.—The power of resistance of rails against breakage and wear;

"3.—Locomotives of new types, and particularly turbine locomotives and internal combustion engine locomotives;

"4. — Electric locomotives for heavy traffic;

"5.—Communication of railways with sea-ports;

"6.—The signal systems of high-speed lines and large railway stations;

"7.—The participation of the personnel in the returns and profits;

"8.—The establishment of railways of penetration;

"9.—The perfecting of the equipment of light railways and secondary lines."

The president then proposed that M. Jose Gavtan de Avala be elected acting president of the session with the following vice presidents: E. Maristany, Marquis d'Argentera, general manager of the Madrid, Saragossa & Alicante Railway; F. Boix, administrator-director of the North of Spain Railway Company; L. Morales, vice president of the higher council of Spanish railways; M. Valenciano y Mazeres, administrator of the Madrid, Saragossa & Alicante Railway.

On May 6 the active work of the congress was started when the five various sections held meetings, completed their organizations, and started the discussion of the various papers to come before them.

The congress recommends to the railway companies and administrations present:

1. To encourage efforts to create new types of locomotives and to improve the current Stephenson type of locomotive by facilitating in particular the initiative of locomotive builders;

2. To develop further in particular the use of extra-high steam pressures and the internal combustion locomotive;

3. To carry out methodically trials of locomotives of new types and different designs built by various makers and to publish the results of such trials systematically and as made;

4. To cooperate with a view to the erection of locomotive experimental stations: the international collaboration of such stations would facilitate progress in scientific locomotive design.

Among the recent improvements which have taken place in steam locomotives of normal construction, special attention should be given to:

(a) Increase in the temperature of superheat, and

(b) The pre-heating of the feed-water.

Taking into account the numerous trials which have been carried out by many of the railway companies, and the experiences gained over many years, this congress is of the opinion that:

(a) The temperature of superheat can, in practice, be taken to 400 degrees Centigrade, special attention being given to lubrication and the method of steam distribution;

(b) That there are in service methods for pre-heating of water which are giving satisfaction.

The congress recommends the adoption of these two improvements on account of the important economies which can be realized from them.

Among the recommendations and conclusions reached by the various sections in their work the following probably are of the greatest interest to Americans:

Considerable progress has been made in concrete tie design. The detail of rail support and fastenings and the suppression of center ballast have been given particular study. The recent installations provide resiliency at the rail support, and at the same time seem to secure electrical insulation between the rails. The suppression of center ballasting and elimination of center solid portion of tie have reduced the weight as well as the cost and also produced a tie better able to withstand shock and vibration.

The present status of this very important question appears very encouraging but it is by no means solved. Experiments and study should be diligently continued, taking into account the prime cost, so that delegates may hope to be nearer the final solution at the next session.

It is advisable to undertake systematic tests in the laboratory to investigate the resistance of concrete to dynamic repeated stresses by varying the nature and size of the aggregate and its cleanliness.

From the reports presented it appears that:

(1) In France, up to the present, it has been the general practice to manufacture light rail motor vehicles fitted with petrol engines, the Diesel engine having so far been little used owing to its high weight and cost.

(2) In the other countries of Europe two types of internal combustion motor vehicles are in use: a light type with a power of less than 100 h.p. usually fitted with a petrol engine and with mechanical transmission; a heavy type of 180 or 250 h.p. with Diesel engine and with electric transmission.

In Europe use is also made of accumulator motor vehicles and internal combustion vehicles using producer gas.

(3) Throughout the rest of the

world all these types are found, with a strongly marked tendency in the United States and Canada to high power, using Diesel engines with electric transmission.

The reports unanimously agree in stating that when the power exceeds 150 h.p., electric transmission is essential, and all find an appreciable saving in the use of rail motor coaches.

To summarize, it may be stated that:

Wherever traffic permits of the substitution of a motor vehicle for a steam train, experience shows that the substitution is financially an advantage, and this advantage will become more appreciable when the tests at present in progress with new fuels (heavy oil, charcoal, etc.), and even with other sources of energy, such as electric accumulators, have confirmed the results achieved to date.

Further, the congress expresses the hope that manufacturers will produce standardized types, thereby reducing the first cost, which up to the present has been so high as to prevent the general adoption of those rail motor vehicles the use of which is really economical.

The summary adopted by the meeting relative to part A, of Question XII is as follows:

(1) The prime movers mainly used in trains working on those lines of the great railways with little traffic and lightly loaded trains on the more important lines are steam locomotives of varying weight, of the ordinary types.

(2) Many of the railways also use rail motor coaches with or without trailers, with a steam or internal combustion engine, the power usually reaching 100 to 150 h.p., or more, and in addition Diesel locomotives. There is a marked tendency to extend the use of such vehicles. Their substitution for heavy trains allows of higher speed and supplementary stops between stations without prolonging the total duration of journey. Their introduction, however, is of too recent date for definite conclusions to be formed concerning the

Some of the United States and Canadian Representatives Who Attended the Congress; at the Palace Hotel, Madrid. Left to Right, First Row: Miss Poor, Mrs. Ewing, Mrs. Poor, M. W. Clement, Miss Clement, Miss Allen, Ellen Allen, Mrs. Plogsted. Second Row: Mrs. Allen, Mrs. ————, Mrs. Smith, Mrs. Carry, Mrs. Wiggins, Mrs. Schleiter, A. J. Ball. Third Row: Charles H. Ewing, Fred A. Poor, W. D. Wiggins, Miss Schleiter, Walter J. Schleiter. Fourth Row: H. F. Burch, J. D. Alcaraz, Porter Allen, George R. Carr, Bird Robinson, D. C. Coleman, F. W. Hankins, W. L. Lentz. Fifth Row: C. Carry, Harold A. Smith, W. C. Wishart, A. S. Mertz, H. J. Forster, E. A. Simmons.

Americans at the Reception Given by the Town Council in Retiro Park, Madrid, May 6. Left to Right: Colonel Winby, Mrs. Poor, Miss Poor, George R. Carr, Locomotive Firebox Co.; A. J. Ball, Pennsylvania R.R.; Mrs. Hills, A. J. Hills, Canadian National Rys.; Fred A. Poor, P. & M. Company; A. S. Mertz, Standard Ry. Equipment Co.

economies resulting from their use.

(3) It is quite usual for vehicles fitted with an internal combustion motor to be driven by a single man; steam locomotives are usually worked by two men.

(4) It is not possible to form any conclusions as to which system is to be preferred, since only long experience can furnish the data necessary for arriving at a definite conclusion.

Delegates attending from the United States were:

U. S. Government Delegates

Col. E. A. Simmons, (chairman), president, Simmons-Boardman Pub. Co.

George R. Carr, chairman of board, Locomotive Fire Box Co.

A. S. Merz, vice pres., Standard Railway Equipment Co.

Chas. H. Muchnic, consulting engineer.

W. J. Plogsted, General Railway Signal Co.

Fred A. Poor, president, the P. & M. Co.

Bird M. Robinson, president, American Short Line Railroad Assn.

Walter J. Schleiter, president, Verona Tool Works.

Harold A. Smith, publisher, *"Transportation"*.

James B. Strong, president, Ramapo Ajax Corpn.

American Railway Association Delegates

H. J. Forster, secretary and treasurer.

J. V. Neubert, chief engineer, maintenance of way, New York Central Lines (also New York Central Lines delegate).

Railroad Company Delegates

Baltimore & Ohio R.R., H. B. Voorhees, vice president.

Canadian National Rys., R. C. Gage, chief electrical engineer; A. J. Hills, asst. to vice president; E. P. Mallory, director of statistics.

Canadian Pacific Ry., D. C. Coleman, vice president, western lines; Sir George LacLaren Brown, European general manager.

Delaware & Hudson Company, H. F. Burch, assistant general manager.

Erie R.R., Dr. Herman von Schrenk, consulting timber engineer.

Illinois Central R.R., W. H. Chisholm, European traffic manager.

New York Central R.R., W. C. Wishart, vice president; D. R. MacBain, general manager, lines west of Buffalo; J. V. Newbert, chief engineer, maintenance of way; W. L. Lentz, engineer of motive power.

Pennsylvania R.R., M. W. Clement, vice president, operation; George LeBoutillier, vice president, New York Zone; F. W. Hankins, chief of motive power; A. J. Ball, foreign freight traffic manager; Porter Allen, chief engineer, maintenance of way, western region; W. D. Wiggins, chief engineer, central region.

Reading Ry., Charles H. Ewing, vice president; Jay V. Hare, secretary.

Improvements in Steam Locomotives

W. L. Lentz, engineer, motive power, New York Central Railroad Co., presented a report before the eleventh session of the International Railway Congress at Madrid on im-

provements in steam locomotives between 1920 and 1928. A brief review of the major points covered in the paper is given here. Considering increased pressures and higher superheats, Mr. Lentz said the results were:

1. A substantial increase in gross ton miles per train hour, which is a good measure of railroad operating performance.
2. Development of locomotives producing greater power per unit of total weight.
3. Increasing capacity of locomotive at all speeds. The mean effective pressure in the cylinders determines the capacity of the locomotive if there is available a sufficient amount of superheated steam, and the higher the superheat and the initial boiler pressure the higher the mean effective pressure and the more efficient and powerful the engine will be.
4. Material reduction in steam rate per indicated horsepower.

The majority of new locomotives in all classes of service constructed during the period under consideration have had boiler pressures ranging from 210 to 250 lbs. per square inch. At the present time there are not fewer than 1,500 locomotives carrying boiler pressures of 225 lbs. and upward; more than 50 of these have pressures between 265 and 284 lbs. per square inch.

There are no indications that the use of higher boiler pressures has resulted in any appreciable increase in maintenance cost nor has there been any material change in design of boiler fittings which can be attributed primarily to increased pressures.

Higher superheats have been coming into use and are being demanded by railroad mechanical departments in practically all cases where new designs are being considered.

A boiler pressure lower than 225 lbs. per square inch is an exception in the case of modern locomotives, the general practice being to design for a pressure of 240 to 250 lbs. Although the higher pressures are generally used in conjunction with the limitation of maximum cutoff of steam to cylinders, a large number of locomotives, particularly for passenger service, have recently been built without cutoff limitations and with boiler pressures of 225 to 240 lbs. per square inch.

One railroad has had considerable experience during the past three years with pressures from 250 to 300 lbs. The experience of that road so far as maintenance of staybolts, flues, boiler sheets, etc., is concerned has been entirely satisfactory, although an additional period of service will be necessary for determinate conclusions. This increase in pressure and corresponding higher superheat temperatures has had no bad effects on valves, cylinders or rod packing.

Senate Chamber at Madrid Where the General Sessions of the Congress Were Held.

The practice of limiting the maximum cutoff of steam to the locomotive cylinders has been a most important factor in a general increase in boiler pressure. The limited cutoff locomotive has, in general, been designed to produce tractive effort equal to the unlimited cutoff locomotive by increasing the boiler pressure rather than by increasing the diameter of the cylinders.

This practice dates back to 1916 when one of the railroads built a two-cylinder freight locomotive of the Decapod or 2-10-0 type. This locomotive carried 250 lbs. steam pressure and steam was cut off from the cylinders at a maximum of 55 per cent of the stroke. Both road and stationary plant tests were made of the locomotive, and to date approximately 600 locomotives of this type are in service on that railroad. During 1925, one of the locomotive builders designed and built a sample locomotive of the 2-8-4 type for fast freight service. This locomotive carried a boiler pressure of 240 lbs. per square inch and operated with a maximum cutoff of steam to the cylinders at 60 per cent of the stroke. Subsequently, 300 locomotives of this and a similar design having 2-10-4 wheel arrangement have been placed in service on various American railroads.

Prior to the advent of the type "E" superheater, the type "A" was in general use. There was no other type in service except a very few smokebox superheaters built prior to 1915 which were not changed to the fire tube type.

The type "A" superheater, more generally referred to in Europe as the Schmidt superheater, is of the fire tube type and the type "E" superheater which was developed in Europe is a modification of the type "A". The type "E" will be referred to in the following text as the improved type superheater.

Due to the ever-increasing demand for locomotive capacity as well as the trend toward higher degree of superheat, the use of the improved type superheater has shown a marked increase. The majority of the various designs of locomotives constructed during the last few

Leading Officers of the International Railway Congress. Left to Right: Lahuerta Morales, Vice President of the Eleventh Congress; E. Foulon, President of the Permanent Commission; J. Gaytan De Ayala, President of the Eleventh Congress; Paul Ghilain, General Secretary of the Permanent Commission; U. Lamalle, Vice President of the Permanent Commission.

Just a Bit of National Sport for the Weary Delegates at the Congress. Not the Only Bull, by the Way, at the Big Meeting.

years have been fitted with the improved type.

There are 49,000 locomotives in America equipped with fire tube superheaters of which more than 1,800 have the improved type. Of the total number fitted with superheaters approximately 25,500 were built with superheaters and 23,500 were saturated steam locomotives converted to superheaters.

Tests indicate that with the improved type superheater, sustained capacity at high speeds is increased 20 to 25 per cent over that obtained with the type "A" superheater. For large modern locomotives it is possible to apply an improved type superheater and produce these results without increasing the weight of the locomotive to any great extent, providing the boiler is properly proportioned.

Various other parts of the locomotive have been improved in conjunction with the application of superheaters. The rapid introduction of the multiple throttle built integral with the superheater header can quite properly be called an improvement connected with a superheater application.

More than 1,000 locomotives have been fitted with the multiple throttle the use of which is increasing very rapidly. There is quite general acceptance of the idea that the throttle valve should be located between the superheater and the steam chest. The benefits accruing from such an arrangement on a locomotive are that the throttle and its operating rigging are removed from inside of the boiler and naturally made accessible with less difficulty. The handling of the locomotive is improved as the control of the steam is much closer to the steam chest valve, and this advantage in handling is particularly noticeable for freight and passenger train service. To build a throttle integrally with superheater header has many admitted advantages in weight, space required, number of steam pipe joints in the smokebox, and, in the form of the multiple throttle, provides a valve, which, being smaller in diameter, remains tight is easily inspected, manipulated and maintained, and, by providing opening in series of the several valves, permits a closely graduated flow of steam.

The increasing use of superheated steam for auxiliary apparatus on the locomotive has been very noticeable. The location of throttle between superheater and steam chest, referred to, has made superheated steam easily available for auxiliaries, which are noticeably inefficient in their use of steam. On many locomotives the blower, air and feedwater heater pumps, booster, stoker and headlight generator, are all supplied with superheated steam. On nearly all locomotives having a throttle on the steam chest side of the superheater, the blower, even though no other auxiliary is so arranged, uses superheated steam. A steam flow through the superheater units is thereby provided during the time the main throttle is closed. Both type "A" and the improved superheaters may be arranged so that this economy in the use of superheated steam for auxiliaries may be realized.

Mr. Lentz, after discussing superheat, boiler ratios, feedwater heaters, valve gears and cutoff in detail, said the Loco. valve pilot is an indicating and recording device having instrument located in cab of locomotive in front of engineer, the dial of which is calibrated in miles per hour. There are two hands on dial, indicating speed of locomotive and position of cutoff in terms of miles per hour. The speed element is of centrifugal type driven by friction wheel in contact with periphery of driving wheel. The cutoff indicator is actuated by contour of cam, movement of which is controlled by rack and pinion connection to lifting shaft of valve gear. The cam is designed from drawbar pull versus speed curve for locomotive and also compensates for the angularity effect of lifting shaft motion in respect to change in cutoff position. The indication of the cutoff hand on dial gives the proper cutoff position for engine to develop maximum output for that incidental speed with full throttle opening.

When the cutoff hand is immediately beneath the speed hand, that point of cutoff is being used which will give maximum drawbar pull, at that incidental speed. For economy in operation the cutoff hand should be kept as far ahead of speed hand as possible without the speed hand varying. The resultant cutoff will produce maximum fuel economy for that incidental speed, track profile and train load.

Tests of the Loco. valve pilot as applied to a Mountain type 4-8-2 wheel arrangement with 69-inch driving wheels, 27 by 30-inch cylinders and 225-lb. boiler pressure shows an average saving of 135 per cent in coal fired per 1,000 gross actual ton miles per train hour, working time. The test runs were made without and with assistance of the device under ordinary operating conditions. The actual gross tonnage of the train ranged from 1,813 to 6,140 averaging approximately 3,530 tons.

His Majesty Receives the Delegates

Many brilliant social events were crowded into the ten days program of the International Railway Congress at Madrid. The most delightful of these, probably, were the reception given by His Majesty, Alphonso XIII, at the Royal Palace, May 14, and the banquet by the Local Commission at the Palace Hotel, May 9. In addition to the entertainments and excursions provided by the commission many attractive luncheons and dinners were given by the Americans. Mr. and Mrs. Forester, on behalf of the American Railway Association, gave a get-together dinner, May 6, for the American and Canadian delegates at which Sir Henry and Lady Fowler, K.B.E., were guests of honor. The United States government delegates gave a stag luncheon, Saturday, May 10, the guests of honor being the Duke of Asturias and E. Foulon, president of the permanent commission. At the same time Mrs. Fred Poor gave a very delightful luncheon for the ladies, after which they were presented to the Duke of Asturias.

Concluding the round of American social gatherings on Saturday night, Mr. and Mrs. Strong and Mr. and Mrs. Plogsted gave a brilliant dinner-dance for the American and Canadian delegates, the unusual feature of which was a charming Spanish dancer in interpretations of old national dances with all their characteristic grace and brisk and energetic rhythm. Besides the American and Canadian delegates other guests were the Countess del Valle de Salazar, Baron de Mora, Senora George de Salas, Mr. and Mrs. Bennett of the Eastern Bengal Railway; Mr. and Mrs. C. V. Bulleid of the London & North Eastern Railway, and Mr. and Mrs. Weber of Madrid.

The Congress Ends

At 12:30 p.m., May 15, the closing session of the congress was held. It was presided over by H.R.H. the Prince of the Asturias. The closing addresses were made by Gaytan de Ayala, and Mr. Foulon.

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It Won't Be Long Now Until You Will Be Attending Regularly in the Large Convention in Session on the Sandy Beach.

What They'll Do At Atlantic City

This Is the Official Program for the Convention of Division V., A. R. A. June 18-25 in the City Auditorium

HERE, WITH NO embellishments, are the rules, regulations, requests and explanations promulgated by the general committee of Division V, Mechanical, for the guidance of delegates and visitors attending the eleventh yearly meeting at Atlantic City, June 18 to 25 inclusive.

The general committee is formed in this way: Chairman, G. E. Smart; vice chairman, A. R. Ayers; C. E. Chambers, C. J. Bodemer, E. B. Hall, F. R. Mays, J. Purcell, R. L. Kleine, O. A. Garber, J. S. Lentz, J. A. Power, O. S. Jackson, F. H. Hardin, S. Zwight, A. G. Trumbull; secretary, V. R. Hawthorne.

The sessions of the convention will be held in the Atlantic City Auditorium. The meeting room will be at the right of the stage in the main exhibit hall.

The enrollment committee will be in the entrance to the Auditorium. Each member of the association, immediately on arrival, should go to the enrollment booth, register and procure his membership button showing his registration. Members will also be provided with badges for their families. Cards for registration will be supplied at the enrollment booth at the entrance to the Auditorium.

Members are requested to be in their seats promptly at 9:30 a. m., daylight saving time, which is one hour faster than eastern standard time. There will be no sessions Saturday, June 21, as this day is set aside for inspection of exhibits.

The Pullman Company and the Reading and Pennsylvania Railroads will have a ticket office at the Auditorium during the convention to take care of tickets and Pullman reservations. Members are urged to make their reservations for return movement as early as possible to enable the railroads and the Pullman Company to provide sufficient equipment to properly take care of everyone.

Extract from Section 10 (a) of the rules of order of American Railway Association, Division V, Mechanical:

> It shall also be the duty of the committee on subjects to receive from members questions for discussion during the time set apart for that purpose. That committee shall determine whether such questions are suitable ones for discussion, and, if so, shall report them to the division.

The committee on subjects will be

G. E. Smart, Chairman of the General Committee.

appointed by the chairman at the opening session on Wednesday, June 18, to receive from members questions for discussion. This committee on subjects will determine whether such questions are suitable for discussion, and, if so, will report them to the division at an appropriate time. Members are requested not to start discussion on subjects at the sessions of the meeting which have not been first referred to the committee on subjects.

First Day, Morning Session.
Wednesday, June 18.
9:30 a. m. to 12:30 p. m.
(Daylight saving time)

Meeting called to order.
Invocation:
Welcome: A. W. Ruffu, mayor of Atlantic City.
Address by R. H. Aishton, president, American Railway Association.
Address by chairman, G. E. Smart, chief of car equipment, Canadian National Railways.
Action on minutes of annual meeting of 1929.
Appointments of committees on subjects, resolutions, correspondence, etc.
Unfinished business.
New business.
Report of general committee.
Report of nominating committee.
Discussion of report on lubrication of cars.

Second Day, Morning Session
Thursday, June 19.
9:30 a. m. to 12:30 p. m.
(Daylight saving time)

Address: W. P. Borland, chief, bureau of safety, Interstate Commerce Commission.
Individual paper: Freight Car Inspection Pit, by R. L. Kleine, assistant chief of motive power, Pennsylvania Railroad System.
Discussion of Reports on:
Arbitration Committee
Committee on Prices for Labor and Materials
Committee on Loading Rules
Committee on Tank Cars
Brakes and Brake Equipment
Committee on Wheels.

Third Day, Morning Session
Friday, June 20,
9:30 a. m. to 12:30 p. m.
(Daylight saving time)

Address: M. J. Gormley, executive vice president and chairman car service division, American Railway Association.
Discussion of Reports on:
Car construction.
Safety appliance (Including report from H A. Johnson, director of research in charge of power brake investigation and automatic train line

A. R. Ayers, Member of the General Committee.

connector investigation).
Couplers and draft gears.
Saturday is set aside to inspect exhibits.

Fourth Day, Morning Session
Monday, June 23,
9:30 a. m. to 12:30 p. m.
(Daylight saving time)

Address: Frank McManamy, chairman, Interstate Commerce Commission.
Discussion of reports on:
Specifications and tests for materials.
Joint committee on reclamation.
Automotive rolling stock
Locomotive and car lighting.
Lubrication for locomotives.

Fifth Day, Morning Session
Tuesday, June 24,
9:30 a. m. to 12:30 p. m.
(Daylight saving time)

Address: Samuel M. Vauclain, chairman of the board, Baldwin Locomotive Works.
Discussion of reports on:
Locomotive design and construction.
Electric rolling stock.

Sixth Day, Morning Session
Wednesday, June 25
9:30 a. m. to 12:30 p. m.
(Daylight saving time)

Address: A. G. Pack, chief inspector, bureau of locomotive inspection, Interstate Commerce Commission.
Discussion of Reports on:
Joint committee on railway sanitation.
Design of shops and engine terminals.
Joint committee on utilization of locomotives and fuel conservation.
Election of officers and members of general committee.
Adjournment.

The Frisco's Fine Record

Frisco Lines, in 1929, made the remarkable record of operating 58,741 passenger trains, 94.8 per cent on time.

The statement sounds prosaic enough in itself, but the accomplishment of this feat was far from prosaic. Back of this performance is the story of many obstacles surmounted.

Full Crew Law Loses in Ohio

Gasoline-electric trains are exempted from compliance with the Ohio "full crew" law because the propelling power actually is supplied by electric motors and the power plant consisting of the gasoline engine is not the direct source of power, according to a decision by a majority of the public utilities commission.

The case before the commission

V. R. Hawthorne, Secretary, Div. V.

was a complaint filed by the Brotherhood of Locomotive Firemen and Engineers, alleging that the Wheeling & Lake Erie was operating a passenger train between Toledo and Zanesville "with a gas-propelled motor car" in violation of the full crew law.

Remember Your Date at the Golden Gate

June 23-26
San Francisco

By
Charles Dillon

Paul Shoup,
President, A. E. R. A.

ALMOST any one of the states has some handicap as a meeting place for organizations of one kind or another. In California, such are the distractions of Nature, it is extremely difficult to keep members in their seats long enough to count a quorum, even if the officers succeed in getting them into the convention hall.

This is very embarrassing for Californians. For editors and other publicists it is little less than tragic. Actuated by the most unselfish motives these writers have told about the beauties of the state only to be informed that their efforts have just about wrecked the convention, the delegates remaining stubbornly absent, oblivious, apparently, to the fact that the original purpose of their visit was to transact business.

Editors, of course, have a duty to perform. When a great convention is scheduled for their home state it is incumbent upon them to describe its many advantages and tell about the entertainment offered. This is not at all difficult in—say—Ohio, Illinois, or Missouri, but when an industrial outfit decides to convene in California—well, what is the loyal publicist going to do but tell the truth, and let the delegates fall where they may?

In the present instance the situation is bound to be distracting. The American Electric Railway Association met out here a long time ago, so long ago that the membership must have changed very much. Men and women who never have been in California may be expected to hustle about a great deal, its wonders to observe, but when men and women who have been here are returning after a long absence during which, doubtless, they have heard a word here and there about the state's development, the convention officers can expect very little attention from them. They are certain to seek old friends and acquaintances, to revisit old scenes, to marvel over this or that improvement; in short, to live again the times they have kept in memory through the passing years. There is nothing we can do about it. Men and women will be boys and girls away from home.

This magazine is not, of course, engaged in selling real estate or climate. They sell themselves. Our duty is to urge every member to attend strictly to business, but the officers of this association must realize that it is practically impossible to tell the members anything at all about the country, and the wonderful program provided for them during the 49th yearly meeting, to be held this time at San Francisco, June 23 to 26, without creating dangerous competition certain to cut down the attendance at the daily sessions. Indeed it is no uncommon thing out here, at the close of a great business gathering, to find delegates and their families still hunting vainly for houses and lots long after the date set for their return to the East, weeping bitterly at the thought of going home.

It can't be denied—not out here, any way—that California, the land of —but before we start on that line, may we not, as President Wilson used to say, present your national president, Paul Shoup, who has a few words to say? And please don't call him Shoop. Say Showp.

Being a thoroughly-trained writing man in addition to having many other admirable qualities, President Shoup starts with the right word. "California," says he, "is expecting you, and making ready to welcome and entertain you. Its hope is that the national anthem of the industry during mid-June will be, 'California, here I come!' The convention meets in San

★ *The major fields of the Edison Battery are railway car lighting, way signalling, multiple-unit control, gas-electric rail cars, battery-propelled trucks, tractors and locomotives. Edison Batt are not sold or recommended for automobile starting.*

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Francisco officially, but the doors of all California are open to you. The welcome extends westward from Tahoe to the Golden Gate and southward from Siskiyou to San Diego.

"We of the Pacific Coast want you to come west both for business and pleasure. We feel that attendance at this convention will be of real benefit to you in meeting your daily problems; and we are sure that your happiness, health and long life will all be bettered by a visit to the Pacific Coast. The convention committees are providing an interesting business program. Nature has provided the scenery and climate; and the California members of the industry promise to do the rest.

"Finally, please don't plan to start home immediately after the close of the convention. You won't want to, once you get here. The electric railways of Southern California are anxious to have you visit their properties and enjoy the beauties of Los Angeles and its surroundings. Then in going home you can turn east from Los Angeles, or double northward and return via one of the several scenic American or Canadian routes. But stay as long as you can; your welcome will be of the kind that does not wear out."

And if that isn't a cordial welcome we'll move back east. That was the official, presidential assurance that the table is ready, and the food on the fire. But President Shoup went a bit farther. He prepared an additional message for the pilgrims to the coast, and this will be found somewhere hereabouts, probably on the next page, but an editor never knows. Nothing more is needed. We never have seen a latch-string but if there is such a thing in California it is hanging outside the lintel, if you know one when you see it. All you have to do is give it a slight pull and come in. Most of the doors are always wide open.

Obviously, it isn't necessary to use space describing the numerous travel facilities arranged by the railroads for your journey to the Promised Land. Such things have been put into type and circulated by your efficient officers. If you don't know about them and arrange your reservations accordingly—well it's just too bad.

This applies also to hotel accommodations in San Francisco. The general secretary sent you full particulars about these things, but even the most experienced travelers sometimes forget. San Francisco has 50 or more good hotels, and this is a christian-like admission for a Los Angeles man to make, but it is a busy place even without a big convention. Therefore it is necessary to arrange for your rooms before you arrive. The town is filled with good restaurants, so you can always get food, and at what we call reasonable rates. Furthermore, the prices quoted you will be the ones paid by Californians every day. Any of the best hotels will give you a room and bath for $5 or $6 a day. That is to say they'll give you the room. They won't give you a bath. You'll have to attend to this yourself. Remember there is no such thing on the coast as the American plan. What you pay for your room includes nothing else. All the big hotels have excellent cafes, however.

You are visiting the Pacific Coast at a time when great tact should be displayed in speaking of population. Therefore it is suggested you refrain from asking the first man you meet in San Francisco about the size of the town; and don't call it "Frisco", if you hope to get back home safely.

The city at the portals of the Golden Gate is one of the world's most famous places—famous in song, story, romance and what not—its people are the most cordial, hospitable, warmhearted persons outside of Los Angeles. They fell about 100,000 short of their expectations in the Federal Census, however, through the grossly inefficient work of enumerators, we don't think, so a visitor should say nothing about it. It isn't being done. Talk about the city's marvelous buildings and the four-track street car system on Market street, the beautiful hotels, the wonderful orchestras and the food, and this and that, but keep off the question of population, at least until you come to Los Angeles.

If you are gifted with a troublesome memory, whatever you do don't forget that on the coast it isn't good manners to go around asking someone to show you an earthquake. There is an ordinance against this in San Francisco. Another enactment provides proper punishment for persons talking about fog when they mean low-lying clouds. All you have to do to have a good time is to keep these few little pointers in mind, see the sights, get out to Golden Gate

A WELCOME TO CALIFORNIA

By Paul Shoup
President, American Elec. Ry. Assn.

OUR CONVENTION committee has everything ready for the meeting of the American Electric Railway Association to be held here June 23-26. Arrangements have been made not only to carry out the work of the 49th annual convention but to provide comfortable accommodations for you and yours in this very hospitable city of San Francisco.

As president of the association it gives me pleasure to extend to all of you a warm welcome.

When the convention is over I hope you may find time to see something of California and the Pacific Coast. They, with their beaches and mountains, forests and streams, and a summer climate unexcelled, have much of infinite variety and charm to offer you.

The welcome I now have the pleasure of extending to you is for as long as you are able to stay.

Park and the Presidio, go over to Oakland or up to Vallejo on one of the big air ferries—we hope the S. P. doesn't stop its paper because of this suggestion—and try to get over to the convention at the Fairmont Hotel before it adjourns.

You probably have heard of Los Angeles. It lies—that is to say it is *situated*—a few miles east of Beverly Hills. Ten years ago that settlement had 615 inhabitants and Will Rogers. The Federal Census now shows that its population is 17,428, a gain of 2486 per cent since 1920, although Mr. Rogers still lives there. No one seems to know much about the census results for Los Angeles except that the enumerators have missed as many citizens as they have counted, and for some strange reason have ignored all the hotel registers. At this writing, the population, inside the city limits—which we never have seen, by the way—is said to be about 1,400,000 while the metropolitan area, which includes everything this side of Santa Barbara, has within its boundaries about 2,500,000 happy persons. Notice, please, that a moment ago we said "at this writing." The town is growing so rapidly there is no telling what its population may be by the time you arrive from San Francisco. The figures quoted are conservative. No one out here ever exaggerates.

Buildings in Los Angeles are not so high as those in San Francisco, but there are more of them. According to our standards, the city hall with its 28 stories is quite a skyscraper, especially when compared with the 15-story height-limit structures. This limit, it should be understood, was imposed so that the sunshine might not be shut out of the streets and shops, and not because of any uneasiness upon the part of the citizens.

All these things we believe you ought to know—little explanations certain to save visitors from making any nasty cracks about population or flat-looking structures in this end of the state. By remembering such suggestions your visit is bound to be pleasant. And don't forget the Pacific Electric Railway and the Los Angeles Railway, which is the street car company, are planning great things for your entertainment when you come here from San Francisco.

Don't be disappointed if you don't get into all the motion picture studios. You may look at the walls or you may fly around, not over them, but you shouldn't expect such organizations to stop business for visitors—it would cost thousands of dollars to do that. These studios are in Hollywood, Westwood, Burbank, Culver City, and other places nearby, and you will find buses ready everywhere to take you out.

Don't go wandering around the streets as if you had spent your life in New York. Street traffic is handled rather expertly here. Watch the crowds and the signals, and don't try to cross in the middle of the block. It's against the law, and extremely dangerous.

The most important rapid transit of all kinds starts from around or near Pershing Square. Information men are assigned to street corners, and believe it or not, they really know their business. They are courteous and efficient.

Notwithstanding the fact that you come to the Pacific Coast in June your overcoat will be needed. You will discover this first in San Francisco. In Los Angeles that garment will come in useful after 4 or 5 o'clock in the afternoon. The nights are chilly, but the people are warm. If you show the slightest interest in anything someone will try to make

you buy it, a trait which grows out of the pardonable desire to have everyone share in the blessings showered so liberally upon Californians by a generous Creator. You're going to have a wonderful visit out here. We shall now listen to a few words by your managing director, Charles Gordon, who talks about business.

Business Aspects of the West Coast Convention

By Charles Gordon

Managing Director
American Electric Railway Association

MEMBERS of the American Electric Railway Association are going to San Francisco in great part to determine how to improve their properties and operating methods to serve the riding public better despite growing street congestion and inadequate earnings. While it is true that the trip to the Pacific Coast, this year, offers unusual opportunity for pleasure due to the many attractions of the West, and the hospitality for which that section is famous, the primary purpose in sending the convention beyond the Rockies was to get the opportunity for first hand contact with transportation problems in western cities which we have not visited as a body for 15 years. The industry's problems are national. Nevertheless every section of the country presents differing combinations of conditions peculiar to location, topography and environment.

Transportation operations on the Pacific Coast present a wide variety of conditions to be met. In fact, it is doubtful whether any section of the country of equal size has such diversified conditions and problems. One can start from Seattle and work south to San Diego, and find something different to absorb the attention of a transportation man in every separate locality.

For instance, the Pacific Electric Railway, the destinies of which are guided by our president, Paul Shoup, in his capacity as head of the Southern Pacific Company which owns the property, is the largest combined interurban electric railway and bus property in the world. Under the direct supervision of D. W. Pontius, president, the highly important problems presented by the rapidly changing requirements of a fast-growing metropolitan region, and the need for coordinating the service rendered by different types of vehicles have been

Charles Gordon,
Managing Director

vigorously attacked over a long period of years. I have yet to encounter a member who is going to the convention who does not express interest in accomplishments that have been made on this wonderful property, and an intention of inspecting it while on the coast. Incidentally, this company has one of the finest equipped buildings devoted entirely to the welfare of employes, to be found anywhere in the world.

Within the city of Los Angeles is the Los Angeles Railway Company, the operations of which are of outstanding interest. The rapid growth of Los Angeles in recent years has made it necessary for the management of this company to solve service problems of gigantic proportions. Buses have been coordinated with rail lines, and there is in operation an unusually complete and well designed bus shop and garage which is second to few, if any, in the country. Peculiarities of climate and environment affect the design of equipment. Narrow gauge track presents other problems of interest to transportation men. Ideal conditions for automobile usage introduce unusual questions of street congestion, traffic handling and parking control.

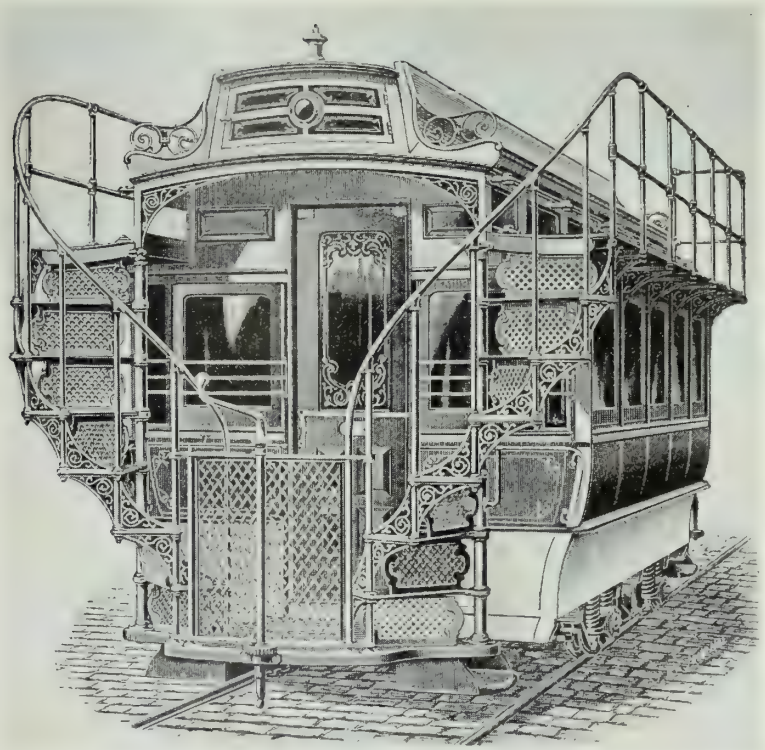
San Francisco's transportation presents an unusual combination of private and municipal operation. Here is rugged topography with very steep hills. Its range of service extends from historic cable cars to the most modern type of equipment. Any local transportation man can find boundless interest in the varied methods of operation in this delightful community, and in the rigid economies required by a 5-cent fare and two competitive systems in the same city. On Market Street are four tracks of cars, two lines of jitneys and private automobiles, to say nothing of pedestrians. Here is a situation of interest to every transportation man as evidence of the results of unsound community policy predicated on the idea of competition instead of coordination of transportation facilities. Then across the bay is Oakland and the interesting operations of the Key System. The transportation problem presented by San Francisco Bay is unique in this country and is one in which every transportation man will find many matters for study.

San Diego with its zone fares and weekly pass system; Portland, Oregon with different conditions and problems; Seattle with its municipally-operated properties, and a chain of intercity buses spanning the highways from Canada to Mexico, present to the fact-finding transportation man a golden opportunity. As golden, in the California vernacular, as the sunshine itself. Be sure you go out.

The Story of the Street Car

By C. K. Lee

Gen. Engr.
Westinghouse Elec. & Mfg. Co.



A Double-Deck Pullman Palace Horsecar. With Bronze Fittings, French Plate Windows, Wilton Carpets and Burl Oak Ceilings. This California Car Had Every Luxury but Speed.

THE STREET car's pedigree is a long one. It is ninety-nine years since horse cars, swung on leather straps, began running in New York City, over iron strap rails laid on a granite sub-structure. The fare, twenty-five cents, was equivalent to several times as much today, and later was reduced. Thereafter, the horse-car, gaily painted, jingling, was the standard mode of city transit for half a century.

In its decay, the horse car later became an established joke, but it was not to be sneezed at in the 1880's. The 12 leading horse-car lines in New York City alone, in 1883, carried 186¼ million passengers. They operated 2759 cars, with 13,443 horses, over 360 miles of track, and their stock quotations were important in the financial news.

This is the first section of an interesting history of street cars, prepared for this magazine by Mr. Lee. The story is published as a special contribution to the entertainment provided on the Pacific Coast for the delegates attending the A.E.R.A. convention at San Francisco, June 23-26.

But the depreciation of the motive power was fearful—often 21 per cent a year, or more. The "Street Railway Journal" was full of medical advice for sick horses. Hoofs could not stand the pounding on the cobbles. Hundreds, thousands of horses in the car barns created a stench intolerable even to the calloused nostrils of those days. Most decisive of all, the horse was an expensive motor; mechanical traction evidently would yield great economies.

Never was seen such a zoo of strange new street cars as this period brought forth. There were smoking steam dummies, decently dressed up to resemble street cars, so as not to scare the horses—556 miles of road were still operated by them in 1890. There were cars that ran by stored steam, by compressed air, and by chemicals. The first gas-electric rail car was thumping about in Chicago, fated to disappear and be forgotten for sixteen years before the next effort on that line. And there was the conquering cable car.

Devised by Hallidie at San Francisco in 1873, the use of the cable car had gradually spread over the country, appallingly costly, delightfully profitable. Only large cities could afford the enormous investment, a mile of single track costing about 30,000 of the large and valuable dollars of that period. Curves cost $20 to $30 a foot, and cable lines were as rectilinear as possible. The cables were expensive and short-lived. No. 1 rope in Kansas City, for example, was 21,267 feet long, and its average life was seven months! Horse-and-wagon wreck crews were constantly ready to dash forth "at a terrific speed" when the cable broke. The replacing of an old cable with a new one was reduced finally to two hours and a half.

The "grips" that seized the cable lasted twelve to twenty days. Eleven of them broke on one 18 per cent grade in one winter, but the track safety catches held. Men walked the tracks constantly, greasing the innumerable underground sheaves. The roads had to provide their own traffic police, and one ten-mile road had 43 of them.

But labor was cheap. Employes received from $35 to $75 a month; and after all, costs were not unreasonable, one manager estimating his total operating expense, including depreciation but excluding interest, at 8.6 cents per car mile. Passengers crowded on at a five-cent fare. Sleet and snow had no terrors, nor any grades on which passengers could stay in their seats. Full speed, 10 to 12 miles an hour, left the horse-and-buggies simply nowhere. In some cities the cars were quite luxurious, with mahogany finish, Wilton car-

The First Passenger Street Car—1832. The Ancestor of All the World's Street Railways. This New York Horsecar Ran to Harlem.

pets, bronze hardware, plate glass and Pintsch gas illumination. The service was altogether superior to the horsecar's, and public and stockholders were delighted. New York was boastfully building a cable road as late as 1894. It seems to have been the last. The cable was struck down, almost overnight, by the trolley.

The trolley car always has been the precocious member of the electrical family. Forty years ago, it appeared magically, everywhere at once, and immediately attained wealth and power. It transformed the American city more forcefully and swiftly than have all the city planners since. It dominated American politics, becoming in the popular imagination a figure of ruthless wealth and potency which has no present parallel.

Who invented the electric car? It is hard to say. No one did so clearly and definitely, as the Wrights invented the airplane. That clever blacksmith, Davenport, made an operating model in 1835, but generators were not yet invented to supply current. Forty-four years later, Siemens in Berlin, carried passengers at a fair on a tiny third-rail narrow gage. Four years later, in 1883, at Chicago, the American public had its first chance to ride on a little exhibition third-rail line, a third of a mile long, built by Field and Edison, the 75-volt generator being supplied by the United States Co., later a part of Westinghouse Electric.

Next year, 1884, Bentley and Knight built the first line intended for commercial operation, handling city traffic at Cleveland, a shallow-conduit road. Inventions now came fast. In 1885, Henry, at Kansas City, tried the overhead trolley, running on top of the wire, as did Van Depoele. Daft began regular service in Baltimore. Experiments sprang up everywhere.

There were no automobiles, airplanes or radio to divide the public's technical enthusiasm. The daring purchaser could choose current supply by over-running or under-running trolley, single or double; by third rail, by the two-track rails alone, by conduit in the center of the track, by conduit beneath one or both rails, and (somewhat later) by buttons down the track, or with the cars all in series with each other, as in Short's system.

Motor drive was by spur gears, bevel gears, chain, belt, connecting rods, gear shifts, and clutches, or what have you? The motors themselves were a marvel of man's ingenuity in ringing changes on the forms of armature and field, unrestrained by mathematics. January 1, 1888, there were 13 roads, 48 miles of track, 95 cars, representing six systems. All these cars worked; none was commercially adequate. The electric car was still an experiment.

An event that winter usually is held to have crystallized this vague situation; to have detonated the explosion of energy which followed. A young ex-naval officer, Sprague, electrified a trolley line in Richmond, and operated it successfully through extraordinary difficulties of weather and mischance. The success of the road, and perhaps, equally the vehement and decided character of the inventor, seem to have settled the matter. Within the year three commercial manufacturing companies were in the field, the Sprague, Thomson-Houston, and Short, all in violent activity. The trolley car had become commercial. All three systems were fairly successful, although to our present ideas, shockingly primitive and troublesome.

Nevertheless, they grew fabulously. January '88, 13 roads, 48 miles of track, 95 cars. By the end of that year, at least 60 additional roads were built or building. In the following year, about 80 more. In 1890, 1753 miles of electric road were reported. In December, that year, President Lowry of the Street Railway Association said, "I believe this is the last convention that will ever seriously consider horses for the operation of street railways". He was called a radical; but within nine months there were 3000 miles of electric track; and in three and a half years after his speech (i.e., June '94) the "Street Railway Journal" said "it is difficult to find new opportunities for profitable investment (in trolley lines). Nearly all cities of 10,000 now have electric cars, and nearly half the towns of from 2,500 to 10,000". 'At one time, there were nearly 30 car-building companies.

Several causes produced this miracle of growth. The need for city

A Turn Table Car in 1847. It Was Made Double-Ended by Turning the Body on the Truck. The End of Its Track Thus Needed no Turn Table, or Loop.

transit was pressing, the new invention was a brilliant advance, the prospective profits were golden, and there was among the manufacturers such fierce competition, such high-pressure salesmanship as is hard even to imagine.

The opportunity was enormous. American cities were growing astonishingly, and in general were served only by horses. As late as 1890, there were 5900 miles of horse car line, 556 of steam dummies, and 441 of cables.

The horse cars had no defenders except their own stockholders. Compared with the cable, the trolley was not only better, but incomparably cheaper. A certain trolley road of 1890 cost but $6000 a mile to build, one-fifth as much as a cable! Electric railway men of 1930 will drop a silent tear on the costs of those days: Ties, 35 cents apiece, overhead, $1500 a mile; run-of-mine coal, $1.40 a ton delivered (in Ohio). The power plant cost $7500 complete, including building and machinery; three 150 hp. engines, and six 50 Kw. generators. Power cost 71 cents a day per car.

To this list, there is one sharp contrast, one essential that is cheaper, and far better, today. The unreliable 15-horsepower motors of 1890 cost $2150 apiece; the perfected 35-horsepower motor of 1930 sells for less than half as much.

Street Car Luxury in the 80's. Straw Under Foot—Gorgeous Overhead.

The profits were golden. They would be today if there were no competition and the trolley had the present equivalent of the nickel fare then, say straight twenty-five cents, or so. One eastern city of 45,000 changed from horses to electricity, the population meantime (1888 to 1896) increasing one-third. The gross receipts increased 258 per cent, its operating expenses increased 187 per cent (for those early cars had plenty of trouble), but the operating income increased 505 per cent!

Added to these incentives, like the wide-open engine of an airplane in a power dive, was the furious competition of the manufacturers, Sprague and Thomson-Houston, which had absorbed the pioneers Van Depoele, and Bentley-Knight. "Each company put into the field a magnificent corps of agents, and established offices in every large city, inaugurating an era of extravagance in securing contracts which rarely has been equalled. Their agents were everywhere. These two companies readily undertook the entertainment of visiting city officials, and frequently conducted them on tours of investigation in different parts of the country. Their headquarters and the principal hotels in Chicago, Boston, and New York were besieged day and night by street railway magnates from all parts of the country. This period was a brilliant and fanciful page in street railway history." (*St. Rwy. Jour.*)

The year 1891 was eventful. It witnessed the first demonstration of the electric car's high-speed possibilities—the little Weems experimental road near Baltimore, which made 120 mph. The torpedo shaped car, 13 feet long, ran on a 28 inch gage track, and drew its current from an upper guide rail. No one rode the car in its tests, which was fortunate, as the improvised circular track, two miles long, gave way at top speed. The experiments provoked much talk but no action. Not until the Zossen tests in Germany, eleven years later, was there another serious attempt at speeds beyond those of steam trains. Nor has there been any since; no one has followed the pointing of those two daring trials into the unexplored land of rail speeds above 100 mph.

About this time (1890) the truck appeared as a separate unit of a street car, four-wheeled cars previously having had the journal boxes connected directly with the car body framing. Maximum traction trucks were born in 1891. Though single trucks were still usual, there were double truck cars in St. Louis, Pittsburgh, and Boston. The first car design aimed at rapid passenger handling appeared in '91—the "accelerator" car whose extra-wide doors were placed off-center, very close to the steps. This year, too, saw the Pacific coast type of car, open at either end, with a closed center section.

Among other novelties of the year 1891 were steel poles; and the first electric snowplows and sweepers which appeared the following winter. In London the first electric subway began running, with a gearless electric locomotive. Pittsburgh tried a double decker car seating 92. The ideas of automatic power station operation, and scientific combustion appeared, long before they were to become popular, in the new Roney mechanical stoker brought out that year by Westinghouse, which also, that year, produced the first carbon circuit breaker. Compressed air cars

Magnificent Though Mule-Drawn.

were running in Toledo, a motive power that, in one form or another was to struggle on until 1900.

But more important than any other development was the metamorphosis of the railway generator and motor. The street railway, by 1890, was a commercial success, but it had about reached the limit of the electrical equipment which had carried it thus far. Before it could advance to the triumphant career which followed basic changes were necessary in power house and motors.

The street railway found itself compelled to abandon the designs which had brought its first success, and strike out on a new line of development. It is to these new designs of 1891 that subsequent electrical equipment traces its parentage.

The success of Sprague in 1888 had crystallized certain substantial features; but cars made an infernal din that could be heard two miles away on a quiet night, and one manager reported that he supposed his gears would last two months if it were not that they always broke sooner!

The move toward a more satisfactory motor was rapid. Came the single reduction motors, the first on the market (October, '90), being by Wenstrom, an unfortunate and short-lived company. Almost simultaneously the following Spring, appeared others, the Thomson - Houston "SRG", (February); Westinghouse 3, (March); and Short.

The Westinghouse 3 is plainly recognizable as the true ancestor of all later street railway motors. It introduced the iron-clad, four-pole, symmetrical field with inward-projecting poles, and a coil on each one, the drum armature with open slots, the two circuit "series" or "wave" armature winding, saturated pole-tips, armature and field coils machine-wound and insulated before being put in the motor. Every one of these features still characterizes all street car motor now built. Other motors came crowding forward.

In April, both the Westinghouse and Short companies brought forth gearless street car motors, and the sober opinion of the day was, "No more laurels, perhaps, can be won in the field of electrical discovery; earlier hands have gathered them all."

Both gearless motors were failures: their cost in weight and hammer blow overbalanced their advantage of simplicity. Another short-lived curiosity of that spring was the single reduction motor brought out by the Edison Company which had absorbed Sprague.

(To be continued in July)

They Say It's True

When passenger train No. 1 on the Louisville & Nashville was pulling out of town, yesterday, says the Etowah, (Tenn.) Post, a woman was seen running across the station grounds waving and calling rather frantically. Station Master Jarvis saw her, luckily, and immediately signalled violently for the flagman on the rear coach to stop the train. The flagman pulled the cord, the engineer slammed on the air, the conductor, highly indignant, jumped down from a forward coach and, seeing the woman, jumped on again, got the train step to help her aboard, and stood ready as she ran up panting for breath.

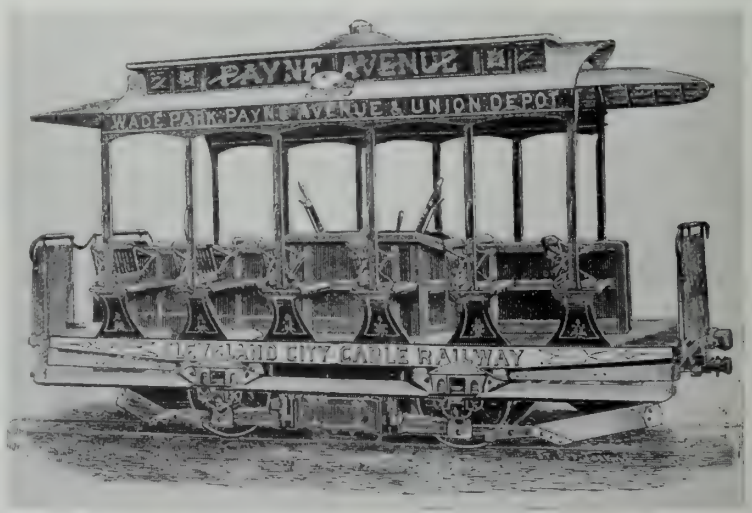
"Oh, no," she gasped, finally, "I don't want to get on the train; I just wanted to mail this letter." She handed the conductor a letter after giving the stamp a final pat, and smiled sweetly: "Thank you *so* much."

After order had been restored the train proceeded. It was Confucius who said, "Woman is the world's masterpiece."

The best part of health is fine disposition. Nothing will supply the want of sunshine to peaches. Whenever you are sincerely pleased, you are nourished. The joy of spirit indicates its strength. All healthy things are sweet tempered.—*Ralph Waldo Emerson.*

The world needs education in order that there may be a better estimate of true values. If world problems are to be solved, it will be through greater application, through more education, through a deeper faith and a more complete reliance upon moral forces.—*Calvin Coolidge.*

The fearless man who loves truth and obeys duty is the man who prevails, and whose work endures.—*Bryce.*



A Cable Road's Grip Car. Open the Year Around. The "Grip" Towed One to Three Bob-Tailed Trailers. Oblivious of Curves, Grades and Weather.

Last Days of the Port Costa Ferry

Suisun Bridge to be Ready Thanksgiving Day

By Erle Heath

The Contra Costa, Largest Transfer Ferry Boat in the World. This Boat and the Solano Will Lose Their Jobs Next Fall When the S. P. Completes Its 5604-Foot Double-Track Bridge Across Suisun Bay at Martinez, Cal.

PROMINENT among the major Pacific Coast construction projects that will be completed this year is the Southern Pacific's double track steel bridge now being erected across Suisun Bay near Martinez, California, over which east and westbound trains of the Overland and Shasta routes will be operated.

The bridge, which will be the twelfth largest of its kind and will be known as the "Martinez Bridge", is 5604 feet long from shore abutment to shore abutment and will cost $12,000,000. The job is now more than 50 per cent complete, and will in all probability be opened to train service Thanksgiving Day, this year, according to C. R. Harding, assistant to President Paul Shoup. Mr. Harding is in charge of the construction of the bridge.

The south approach of the bridge is at Suisun Point in the easterly section of the city of Martinez, and the north approach at Army Point on the north shore of Suisun Bay. An important factor in choosing the site was the possible existence of earth faults. The company considered three widely separated locations. First the present site of its train ferry between Port Costa and Benicia, which was abandoned because of the earth faults; second, near Antioch to take an extension of the railroad's Walnut Grove branch, and third, the Suisun Point to Army Point which finally was selected. Investigation revealed that there was no active fault line crossing between Suisun Point and the Army point. For this reason the Antioch location was abandoned because a bridge at that point would be longer and more costly than a bridge at the Suisun Point site.

The bridge will consist mainly of seven 526-foot through truss spans, one lift span 328 feet long, and two deck truss spans 264 and 504 feet long with short steel viaduct approaches at both ends. All of the through spans will be 70 feet in the clear above mean higher high water, and will clear 95 per cent of the water traffic. The lift span is designed to open in 90 seconds, will have under clearance of 135 feet above mean higher high water when open. The bridge will be principally of silicon steel, and will not be exceeded in its load-carrying capacity by any other railroad bridge in the country. The design of the structure requires an anchorage of steel spans to piers, and the horizontal cross sections of the piers themselves to have a resistance to horizontal shear more than sufficient to provide for forces caused by a bedrock acceleration of as much as 2½ feet per second per second.

Under authority granted for the preliminary surveys the company determined the depth of water and the depth of rock by surroundings and surveys. The water toward the north shore showed a maximum depth of 55 feet. At this depth it was impracticable to make soundings and borings from barges, so platforms were erected on piles; from these ten-inch well casings were sunk to rock. The mud was so soft that the casings went nearly all the way through following their own weight. While they were sunk, bearing tests were made on the several materials encountered in the hope that something good enough for foundation purposes would be found. But as it was all poor stuff it was decided to sink the bridge piers to solid rock.

The rock found at the bottom was Chico formation, very heavily bedded and tilted on a 45-degree angle. Its average depth is about 116 feet below low water. The greatest depth of rock below water is 140 feet. The pier erected near this point is 135 feet below low water and has a height of 206.5 feet. It is 40 feet by 60 feet at its base, and it contains about 15,000 cubic yards of concrete and weighs 60,000,000 pounds.

Work on the bridge proper began

An 1860-Foot Steel Viaduct Is Part of the North Approach Now Being Built Across Suisun Bay.

in April last year. At present the work is progressing according to schedule. On May 15 all the work on the south approach, including 560 feet of steel viaduct, was practically completed; all the north approach, including more than half of an 1860-foot steel viaduct, was complete except for the laying of rail. Seven of the main piers were completed on that date, and work is going ahead rapidly on the remaining three. Of the steel super-structure 1132 feet, including the 328-foot lift span, was erected from the south approach, and work is now going forward on the steel in the third through truss span between piers 13 and 14.

There are several engineering features developed in the construction of the bridge which are original in the history of bridge building. The Southern Pacific is the first railroad which has employed the services of an experienced United States navy trained diver to examine and investigate the seating of all caissons sunk for pier construction preliminary to sealing with concrete.

Another novel feature in the construction of the piers is the pouring of the concrete into steel forms to the bottom of which is bolted a steel cutting edge. Through a series of square "wells" built in this concrete caisson, clam shell buckets are dropped and mud and rock dredged from the bottom of the pier. As this dredging proceeds at the foot of the pier it sinks of its own weight and additional concrete is poured into steel forms attached above. As soon as the pier has settled to bed rock, the diver is sent down for minute investigation to determine how much of the pier base actually touches rock. With this information available, water under pressure is applied to the bed rock and all loose material washed out between the bottom of the pier and the bed rock. Spread footings are then poured and a 35 ft. lift of tremie concrete is poured to seal the pier.

Another new method of construction was used in the building of the superstructure of the bridge. The work was without precedent in American bridge construction, and utilized the tide power of Suisun Bay waters to float into position an 1800-ton steel span 504 feet long.

To avoid the costly driving of thousands of wood piles used only temporarily, a method of erection was devised which required the floating of the 504-foot span on two steel barges. This span, to be used as falsework in the construction of eight permanent through spans, was and ultimately will be used as a permanent span at the north end of the bridge.

The novel erection method was proved practicable on February 28 when the span was moved by the power of the tide from its original position on the wood piling to two piers, Nos. 11 and 12, where the first permanent truss span was erected. The job was done in nine hours. With the completion of this truss span, the falsework span was moved to the next opening and the process will be repeated until all eight spans have been erected. It will then be placed in its permanent position at the north end of the bridge.

When completed the bridge will not only mark an outstanding development in the transportation fa-

(Continued on Page 50)

This Picture, Taken May 10, Shows Progress on Superstructure. The Second Through Truss Span is the 328-Foot Lift Span.

More Economy Is Demanded In Fuel

Officers of the International Railway Fuel Assn. for 1930. Seated, Left to Right, W. G. Black, Vice President; W. J. Tapp, President; C. H. Dyson, Vice President. Standing, Left to Right, C. T. Winkless, Secretary-Treasurer; J. M. Nicholson, Vice President.

By C. E. Richard

IT IS SOMEWHAT unusual to find news of any organization outside the hotel in which its convention is being held, yet during the 22nd yearly meeting of the International Railway Fuel Association and the International Railway Supply Men's Association, at the Hotel Sherman in Chicago, last month, many of the prominent fuel men in attendance made news of the most important sort at many conferences not on the agenda of the convention.

Taking advantage of the presence in Chicago of scores of authorities in fuel consumption, production and distribution, numerous meetings were arranged during the four days of the convention, probably the most important of which was called by the marketing research institute of the National Coal Association.

The keynote for the fuel men was sounded by J. S. Pyeatt, president of the Denver & Rio Grande Western. Economy, more economy and still more economy in fuel was urged upon them by Mr. Pyeatt to counteract the operating expense forced on the roads by demands for increased speed and better service.

"Fuel consumption reflects the degree of operating efficiency enjoyed by a railroad," he said, "as every operating improvement virtually is reflected in a saving in fuel."

Mr. Pyeatt said that with the heavy demands for fuel made upon railroads today, "unless we exercise marked economy in our use of fuel, we shall find ourselves literally burning up the profits."

Development through tests of more scientific methods of firing locomotives, Mr. Pyeatt said, is the most pressing need of the time. "We leave too much to individual judgement even with the stoker and automatic firedoors which help to conserve coal," Mr. Pyeatt said. "Every railroad has fuel problems. The only way they can be solved is by extracting from well known practices that which can be applied most effectively under the peculiar conditions of operation every road faces."

Samuel O. Dunn, editor of the Railway Age, also sounded the economy note. Changes in transportation, including the declining passenger business, diversion of traffic from railways to highways, and attempts to divert it to waterways, he said, make a strong demand on railroads for gigantic economies.

C. E. Bockus, president of the National Coal Association, discussed the relation of the coal industry and the railroads with each other, and the dependence of both upon each other.

H. P. Hardin, assistant to the president of the New York Central Lines, spoke on fuel economy on railroads from a mechanical standpoint.

Committee reports, mostly technical, were more numerous than ever this year. Among the subjects considered were steam turbine locomotives, Diesel locomotives, front ends, grates and ash pans, coal locomotive firing practice, oil locomotive firing practice, coal and oil-fired plants,

Pacific Type, F-19, Capable of Hauling Fifteen Pullmans on the Chesapeake & Ohio's New Train, the Sportsman.

storage of coal and oil, and other related topics.

The meeting called by the National Coal Association was to lay a foundation for a practical program of coordinated activities between those interested in coal heating equipment and coal producers with a view to advancing a modern program of merchandising automatic heat. It was agreed that a contact between coal users and coal producers was essential. Each association will be asked to nominate members to a contact committee. Development of a definite point of contact through which the National Coal Association will be kept posted on new methods of coal handling and coal burning equipment was recommended. Information as to developments in competitive fuels, and the progress that the stoker and coal handling people are making in meeting competition will be compiled, with suggestions to offset this competition.

Another matter occupying the attention of many delegates to the convention is the "no bill" coal situation. C. E. Bockus said the American Railway Association, through W. J. McGarry, manager of the open top car section of that body, has submitted to the National Coal Association a report of a special committee of the A.R.A. dealing with the no bill coal question. This report recommends changes in the car distribution rules. A conference has been requested by the railway association to consider the new rules. Mr. Bockus said. The committee recommends the following for incorporation in the car distribution rules:

Whenever the available car supply in any region or district is such that all orders for cars can be filled, cars shall be placed at each mine in accordance with its daily order except that whenever a mine holds on mine tracks or mine sidings for one or more railroads unbilled coal loads equal in number to one day's rating additional cars shall not be supplied.

When an unbilled coal load or a partly loaded car is held in excess of 30 days the contents of such car may be unloaded at expense of mine operator and at his risk either on mine property or carrier property and car recovered for further service.

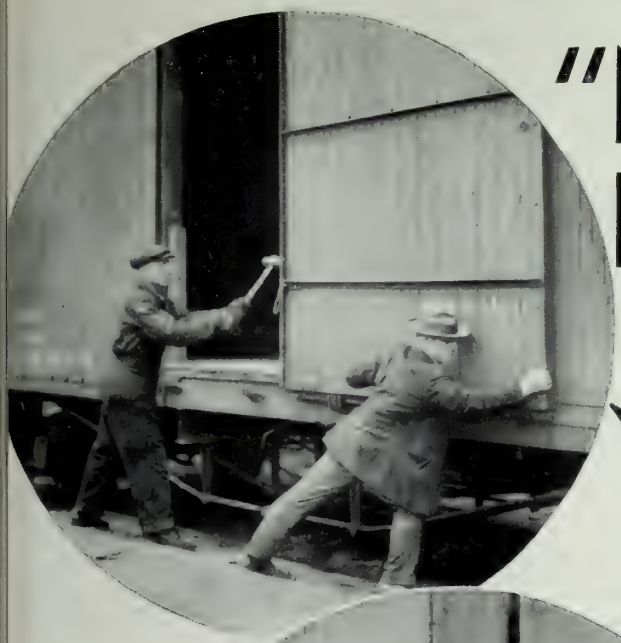
For incorporation in the demurrage tariff the committee recommends the following:

Mine track or mine siding is a track which the mine owns, leases or otherwise controls, or which in the usual course of business is devoted exclusively to the traffic at the mine (or mines, if more than one owned or controlled by the same interests and operated substantially as a unit) which track is a part of the mine layout, constructed or operated by the mine company or by the carrier especially to serve the mine or mines in question, and which can be reached from the wine without switching over tracks that are not mine tracks within the contemplation of this definition.

Cars loaded with coal or coke at mines, mine sidings or coke ovens will be moved therefrom only on written order from mine owners, operators or shippers and when so moved or held at weighing stations, classification yards or elsewhere twenty-four hours free time will be allowed for forwarding instructions. During car shortage periods, pro rata distribution shall prevail as provided in the present rules.

The exhibit of the International Railway Supply Men's Association this year was more pretentious than ever. The entire second floor of the Hotel Sherman was given over to it. More than 70 manufacturing concerns were represented. The complete list follows:

American Arch Co.; American Throttle Company, Inc.; American Locomotive Co.; Argyle Railway Supply Co.; Badeker Manufacturing Co.; Baldwin Locomotive Works; Barco Manufacturing Co.; Bethelehem Steel Co.; The Bird Archer Co.; The Bradford Corpn.; Burnside Steel Foundries Co.; The J. S. Coffin, Jr., Co.; Consolidated Ashcroft Hancock Co.; Corley-De Wolfe Co.; Dearborn Chemical Co.; Detroit Lubricator Co.; Paul Dickinson, Inc.; The Duff Norton Mfg. Corpn.; Duntley Dickinson Co.; The Edna Brass Mfg. Co.; Firebar Corporation; Franklin Railway Supply Co.; The Garlock Packing Co.; General Refractories Co.; Gibbs Grease Cellar Plates; Henry F. Gilg; Gold Car Heating & Lighting Co.; Graham-White Sanders Co.; Grip Nut Co.; General Steel Castings Corpn.; The Hanna Stoker Co.; Hulson Grate Co., Inc.; Hunt Spiller Mfg. Corpn.; International Correspondence Schools; Johns-Manville Corpn.; The Leslie Company; Lima Locomotive Works, Inc.; The Locomotive Finished Material Co.; Locomotive Firebox Co.; The Lunkenheimer Co.; Lower Stoker Co.; The McFarland Co.; MacLean-Fogg Lock Nut Co.; W. H. Miner, Inc.; F. W. Miller Heating Co.; Nathan Manufacturing Co.; National Airoil Burner Co.; National Refining Co.; National Railway Devices Co.; The Okadee Co.; Ohio Injector Co.; Paxton Mitchell Co.; The Permutit Co.; The Pilliod Co.; The Pyle National Co.; Pilot Packing Co., Inc.; Railway Age; Railway Journal; Railway Purchases & Stores; Rees Mfg. Corporation; Roberts & Schaefer Co.; Sargent Company; Sawards Coal Journal; Wm. Sellers & Co., Inc.; Smith Multiplex Pressure Devices; Spring Packing Corpn.; Standard Auto-Tite Joints Co.; Standard Brake Shoe & Foundry Co.; Standard Locomotive Equipment Company; Standard Stoker Co.; Superheater Co.; The Swanson Co.;



"Nothing Rolls Like a Ball"

You can get away from these conditions on Box and Automobile Cars . . . . . .

by using

REO

Ball-Bearing Door Fixtures

In Use on 36 Railroads

CHICAGO RAILWAY EQUIPMENT CO.
CHICAGO, ILLINOIS

Steam Coal Buyer; The Texas Company; T. Z. Railway Equipment Co.; Union Asbestos & Rubber Co.; Valve Pilot Corpn.; Vanadium Corporation of America; Vapor Car Heating Co., Inc.; Viloco Railway Equipment Co.; Whiting Corpn.; Worthington Pump & Machinery Corpn.

As usual, entertainment played an important part in the convention. A cotillion featured the first night, a theater party followed, then informal dancing and card parties. The affair was topped off with a banquet in the beautiful main ballroom.

The sessions of both organizations were concluded with the election of officers and members of the executive committee. For its president, the International Railway Fuel Association chose C. H. Dyson, fuel agent of the Baltimore & Ohio. Three vice-presidents were elected: W. G. Black, mechanical assistant to the president, Chesapeake & Ohio; C. I. Evans, chief fuel inspector, Missouri, Kansas & Texas Railway, and J. M. Nicholson, fuel conservation engineer, Atchison, Topeka & Santa Fe. Mr. Dyson was elevated from a vice presidency; Mr. Nicholson was reelected, and Mr. Evans was the new vice president.

C. T. Winkless, of the Rock Island Lines was reelected secretary-treasurer. Three members were added to the executive committee. They were O. J. Brown, supervisor of fuel service, Boston & Maine; L. E. Dix, fuel supervisor, Texas & Pacific, and C. Roberts, assistant road foreman of engines, Pennsylvania Railroad.

The International Railway Supply Men's Association followed the same line of succession in choosing its officers. S. A. Witt, of the Detroit Lubricator Co., Chicago, was elevated to the presidency replacing C. O. Jenista, of the Barco Manufacturing Company, also of Chicago. L. R. Pyle, Locomotive Firebox Company, Chicago, was chosen vice president, and C. M. Hoffman, Dearborn Chemical Company, Chicago, the former treasurer, moved up into Mr. Pyle's former job of secretary. E. J. Fuller, of the Hunt Spiller Manufacturing Company, was the one new officer chosen. He is the new treasurer. W. J. Dickinson of Duntley-Dickinson Supply Co., Chicago, was reelected assistant secretary-treasurer. The three new members of the executive committee are J. W. Fogg, McLean Fogg Lock Nut Co.; John L. Bacon, Valve Pilot Corporation, and Frank Fisher, the Pillioid Company.

Report of Committee on Diesel Locomotives

By Clarence Roberts

Chairman

About 100 standard gauge Diesel-electric locomotives are now in service or on order for railroads and industrial concerns in the United States and Canada. Largely these locomotives are engaged in switching service, in which service they have reduced fuel costs, operated at low maintenance costs and proved to be reliable. They now may be found operating in yard classification and in transfer service; and as reported by this committee in the proceedings of 1929, two Diesel locomotives have been constructed for passenger service and one for freight service.

In May, 1929, Baldwin's built a 0-4-4-0 type Diesel-electric locomotive No. 61000, in which has been installed a 1000 h. p. Krupp Diesel engine. The engine has oil-cooled pistons and heads. Jacket water and piston cooling oil are cooled in radiators by means of electrically driven fans. The engine is started by high pressure air. Compressor attached to oil engine furnishes air for starting and for W.A.B. special No. 14 EL modified brake equipment.

The Ingersoll-Rand Co. is constructing for the Erie Railroad an oil-electric locomotive for switching service of a design radically different from any previously constructed by them. The power plant consists of one 825 b.h.p., Ingersoll-Rand oil engine direct connected to a 525 k.w. generator. The latter furnishes power to four G. E.-287 traction motors mounted on trucks.

Two 1600 h.p. oil-electric locomotives of new design, one for passenger, the other for freight and switching are about to be constructed also by the Ingersoll-Rand Co. The power plants are similar in each of these two locomotives, consisting of two 825 b.h.p. Ingersoll-Rand oil engines in each locomotive, each engine direct connected to a 525 k.w. generator. The generators furnish power to four G. E.-286 traction motors mounted on the trucks of the passenger locomotives while on the freight locomotive there are six G. E., Z.-1748 traction motors mounted on the trucks.

In regard to the new passenger and freight Diesel-electric locomotives illustrated and described in the proceedings of 1929, New York Central Nos. 1500 and 1550 are still in the experimental stage and have not been in continuous service for a sufficient length of time to secure operating data of any value. The Boston & Maine Diesel locomotive is still under test in Germany, and definite information regarding this locomotive was not available in time for this report. Likewise, no information could be secured relative to performance of the Canadian National locomotive No. 9000.

Baldwin Diesel-electric locomotive No. 61000 was under trial in heavy yard service on an Eastern Railroad, its performance being compared with that of a consolidation steam locomotive weighing 251,000 lbs. and having a tractive effort of 49,000 lbs. The hourly fuel and lubricant consumption and cars handled were as follows:

COALING PLANTS

America's Foremost Designers and Builders of Locomotive Coaling Plants

Wrigley Bldg. **RS AND COMPANY** Chicago

NEW-

2000 Ton Capacity, Six Tracks, Simplex Automatic Electric, Roller Skip Type.

Designed and Built throughout by us for

Boston and Maine Railroad - May 1930

SEE THIS PLANT NEAR "PRISON POINT BRIDGE"-BOSTON

	No. 61000	Steam loco.
Fuel—Oil, gals.	9.40	..
Coal, lbs.	..	700
Lubricants, gals.	0.20	0.05
Cars handled	21.10	20.10

This same railroad made a comparative test between the Westinghouse 600 h.p. Diesel locomotive and a six wheel switching locomotive, weighing 180,000 lbs. and having a tractive effort of 36,000 lbs. This test was also yard operation, though of different character and much lighter than that performed by locomotive No. 61000, so that a comparison between the two Diesel locomotives is not possible. Hourly performance:

	600 h.p. Diesel	6-Wheeled steam loco.
Fuel—Oil, gals.	3.87	..
Coal, lbs.	..	316
Lubricants, gals.	0.295	0.042
Cars handled	16.00	15.60

In another industrial plant, using a 300 h.p. Diesel-Oil electric locomotive, the comparative hourly operating costs for 1929 was as follows:

Fuel oil	$0.210
Lubricant, oil	0.055
Maintenance	0.171
Other costs	2.370
TOTAL—Oil-electric loco.	$2.806
Steam loco.	4.432
Difference—favor oil-elec.	1.626

The committee believes the cost data shown in the preceding tables of steel mill and industrial operation to be reliable, and calls attention to the fact that industrial organizations do not find it so difficult to segregate the details of operating costs for particular types of equipments, as transportation companies do.

As to future design, the committee learns from Diesel locomotive builders, that single units of 2000 h.p. are a possibility, and that any desired number of such units may be operated in multiple.

Committee urges a standard specification for Diesel engine fuel oil. This subject is now being handled by a special research committee on Diesel fuel oil specifications, A. S. M. E., which has made a progress report, but not yet reached a final conclusion. It is thought more definite information will be available for the proceedings in 1931.

The most interesting development abroad is represented by the German Diesel locomotive with air transmission, built by the Esslingen Locomotive Works, and now undergoing tests on the German State Railways. This is a 4-6-4 locomotive with a 1200 h.p. Diesel engine driving an air compressor, the compressed air being admitted to ordinary locomotive cylinders in the usual way. The exhaust of the engine is used to heat the air before admitting it into the cylinders, and thus part of the heat which is otherwise wasted with the exhaust is recovered. Besides, the heating of the air is desirable because it eliminates the unduly low temperature as a result of the expansion and rapid fall in the air temperature.

—P & A Photo.

Diesel Locomotive Built at Leeds, England, for Chilean Travel; 300 Horsepower.

The prime mover is a 1200 b.h.p. Diesel engine of the conventional M. A. N. design, directly coupled to a high speed compressor. Very small clearance is necessary for a good volumetric efficiency, and before placing it in the locomotive it was thoroughly tested at the Esslingen Works on a test bed.

Experiments were also made to determine whether air could be used without fear of explosions in the compressors or locomotive cylinders, which might be caused by oil residues in heated compressed air.

The compressed air at a pressure of about 100 lb. per square inch, leaving the heater with a temperature of 600° to 650° F., enters the cylinders, which have a diameter of about 28", through an ordinary throttle and the usual Walschaert gear. The cutoffs can be made as low as 15 per cent. The principal dimensions are shown at the bottom of this page.

Another interesting development is the four Diesel locomotives built in Denmark, two equipped with Burmeister & Wain Diesel engines and two with Frichs engines. The Burmeister & Wain engine is a single-acting, two-cycle, six-cylinder vertical type engine with solid injection, developing 450 b. h. p. at 550 r. p. m. The generator is of the direct current type with a voltage up to 650 V. and is directly coupled to the Diesel engine without intermediate flexible coupling. The exciter and the auxiliary generator for charging the batteries are coupled together and driven from the extension of the main generator shaft by a belt.

The starting of the Diesel engine is effected by using the generator as a motor from the storage battery, which consists of 33 cells, with a capacity of 500 ampere hours on the five-hour rate of discharge.

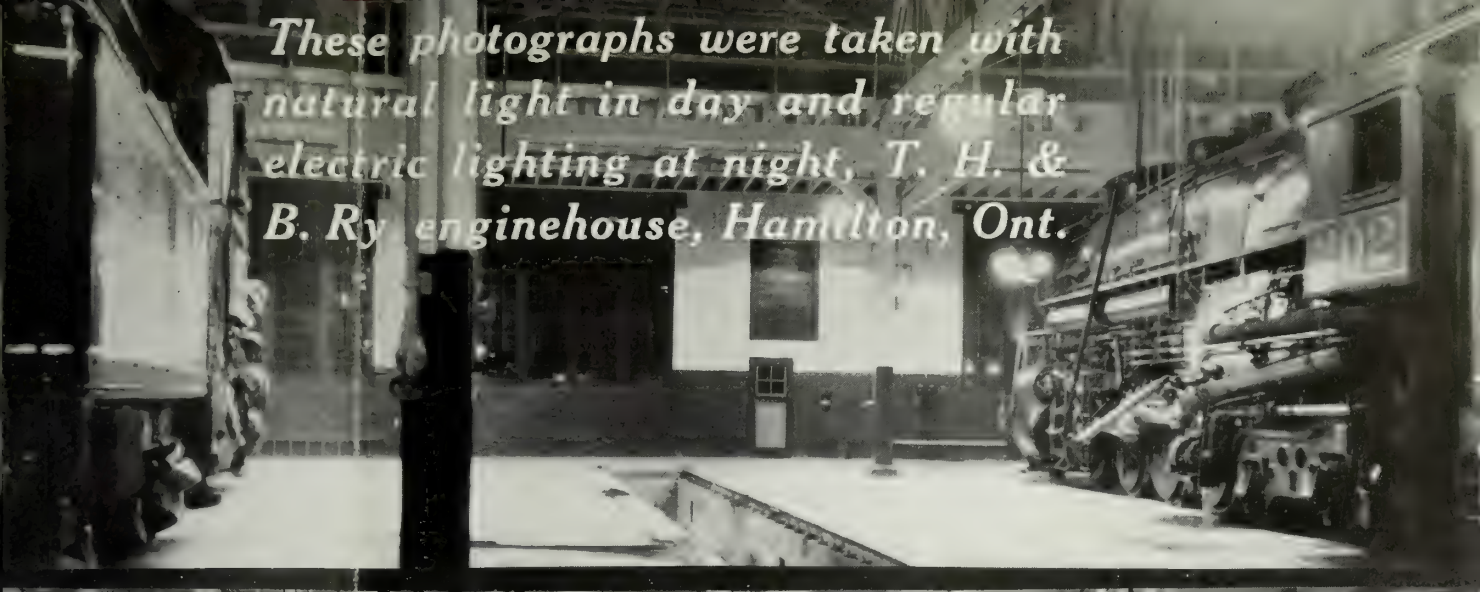
The locomotive has a box type cab and is supported by two trucks; one is a four-wheel and the other is a six-wheel truck. There are two driving motors, one on each truck. The principal dimensions are as follows:

Total length over buffers	40′ 11″
Length of body	35′ 9″
Maximum width	9′ 6″
Height from rail	14′ 11½″
Diameter of driving wheels	3′ 6½″
Diameter of carrying wheels	3′ 2″

Why should there not be a patient confidence in the ultimate justice of the people?—*Lincoln.*

"It is a matter of life and death to cross important thoroughfares, as it was in 1600 to cross the Atlantic.—*Sir Charles Oman.*

Engine power	1200 b.h.p.
Revolutions per minute	450
Working air pressure	100 lb. per sq. in.
Tractive power at rail	25000 lb.
Number of cylinders of Diesel engine	6
Diameter of Diesel cylinders	17 11/16"
Stroke of Diesel cylinders	16½"
Diameter of compressor cylinders	25"
Stroke of compressor cylinders	13¾"
Diameter of locomotive cylinders	28"
Stroke of locomotive cylinders	25⅝"
Diameter of driving wheels	63"
Speed limit	50 miles per hour



These photographs were taken with natural light in day and regular electric lighting at night, T. H. & B. Ry enginehouse, Hamilton, Ont.

PROVING that Smoke, Gas and din of Stack Blowers are not necessary in an Enginehouse

Super-power Locomotives can be more Effectively Operated and Efficiently Maintained Either Day or Night with the DIRECT STEAMING SYSTEM

On Good Authority

Direct Steaming

TRADE MARK REG.

Solves the Smoke Problem at Locomotive Terminals

"The (Toronto) enginehouse, which is centered around a 120-foot three-point-bearing turntable, is equipped for taking care of locomotives by Direct Steaming. Fires are dumped at the ashpit on the way to the house; locomotives are held under 160 lb. steam pressure in the house, the steam being provided by the power plant, and fires are started in outbound locomotives by an oil firing apparatus situated beyond the turntable.

This very effectively reduces the amount of smoke produced in the engine terminal and results in a much cleaner enginehouse."

from an article in the January, 1930 issue of TRANSPORTATION by Mr. E. W. BEATTY, Chairman and President Canadian Pacific Ry.

RAILWAY ENGINEERING EQUIPMENT CO.
RAILWAY EXCHANGE - - CHICAGO

THE DIRECT STEAMING CO. OF CANADA, LTD. - KINGSTON, ONT.

Editorial Comment

The Big Conventions

EVERY GREAT and commanding movement in the annals of the world, said Emerson, is the triumph of enthusiasm. The three principal conventions of the present month are typical examples of just what the Boston philosopher meant: Division V., Mechanical, A. R. A., June 18-25; Division VI., Purchases & Stores, June 18-20, both at Atlantic City, and the meeting of the American Electric Railway Association, June 23-26, at San Francisco. There are other important conventions, all recorded in this magazine last month, but the three mentioned are the outstanding organizations affecting the progress of transportation on the American continent.

Nothing is so important to the continued usefulness of the associations and divisions mentioned as permanent enthusiasm in the membership. Without this one quality no such bodies could serve their purpose. To perpetuate this enthusiasm railroads are obliged to encourage officials, executive and supervisory, to so organize their duties that attendance is possible without seriously impeding current duties and responsibilities. This the railroad managements do, and in doing it increase the value of their employes. By giving intelligent attention to the matters assigned to their care and study by the national organization these employes and officials add to their own earning ability.

But all the enthusiasm imaginable among members would be ineffective if it did not include the most loyal support for officers and committees to whom the burdens are handed. Members may cheer and applaud, but it is the officers and the committees, after all, who carry the load and keep the organization actively operating and cooperating in every proper way. Just as in the national congress at Washington, the important work is done by committees in stuffy rooms by men whose natural impulse might be to join the throngs outside.

We have only one criticism to make when we write about our big railroad conventions: They give their entire time and attention to their own affairs—or what they believe to be such—and year after year, neglect the finest opportunity to have presented to them a broadside view of their own companies' condition with respect to finances, regulation, competition—a national outlook. The membership of Division V., in convention a year ago at Los Angeles, certainly showed its interest in such matters. Every big convention, every year, regardless of department or division, should give 30 or 45 minutes to public relations. The more a man knows about his company and its standing with the public the more intelligently can he contribute to the growth of good relations. Neglected too long it may not be necessary to do anything.

Again the U. P. Wins

News is something unusual. Things that happen time after time are not so classified. Therefore we make only casual mention of the stereotype report that the Union Pacific System is again declared winner of the yearly steam railroad accident prevention contest. The details have been printed for several years. The only strikingly new thing is found in the fact that employe accidents last year numbered 58,466. In 1923 there were 150,000 such disasters. The award was announced May 2.

Development of the Diesel

Turning from the interesting report of the committee on Diesel locomotives, read in the yearly convention of the International Railway Fuel Association at Chicago, early in May, we find no less an expert in mechanical matters than Henry Ford watching its potential development for aerial travel. Indeed one rarely spends an hour at an airport nowdays or in an airplane factory without hearing thoughtful and serious men talking about this engine. If for no other reason—and there are many—all airmen are eager to see the Diesel engine brought to perfection for airplanes to overcome the worst aspect of crashes—the burning of plane and passengers.

There are problems to overcome, however, in designing the Diesel of great horsepower for main line railroad work, but nothing seriously discouraging, according to students of the subject. Greater problems have been solved in this country. Designers declare the Diesel is going to have an important place in motive power for railroads, but that it may not be soon; not soon enough to alarm the makers of the steam locomotive.

Eleven Diesel locomotives of 34,000 pounds average tractive power were ordered for use in the United States in 1927 by public service railroads and industrial corporations. In 1928, 13 Diesel locomotives of 42,000 pounds average tractive power were ordered for domestic use and two for export, while in 1929, 67 Diesel locomotives of 67,000 pounds average tractive power were ordered for domestic use and 13 for export. According to the Philadelphia Financial Journal, equipment men declare that this does not necessarily mean that the day of the Diesel locomotive has arrived, but that it does mean that a certain demand for Diesel locomotives is here and that it will grow and expand in proportion as the Diesel locomotive is developed.

The Statistician and the Locomotive

One of the most efficient, old-time data hounds in the country, a man just retired from active duty, came in a few days ago to talk about locomotives. And that is just what he did, disclosing as he went along, how the mathematical mind views such things, the mind upon which the president calls, often quite unexpectedly, for facts and figures enough to stagger anyone except a hotel clerk with your bill.

"There are times," said the statistician, "when railroads can well afford to analyze various phases of economies that may result from the purchase of new type locomotives or improving old ones to meet

the ever-changing conditions similar to those confronted in the past few years.

"Yesterday, the drag train predominated. Today, faster time is demanded. The lighter-loaded trains for greater speed are in the majority on most roads. This means a sacrifice of approximately 1.5 per cent in train load for each mile increase in speed, miles per hour, which carries with it considerable loss in operating costs.

"Part of this may be offset by more efficient designing of locomotives, building them to fit the individual characteristics of a train district, higher wheels for greater speed. Part of the loss from a reduction in number of drag trains now run will be offset automatically by a locomotive designed for faster speed as a result of less overtime, quicker turn on power, greater average miles per car per day, and this means fewer cars to maintain and own. More intensive use of freight cars means less obsolescence in some types of cars which may need early retirement.

"Increased speed at the cost of train load reduction, brings up the potential economy in grade reduction, purchasing of larger locomotives, new devices on, or changes in old type locomotives to increase their tractive force. Any economy resulting from these is dependent upon the utilization.

"In train districts where 70 per cent of the trains which run in the direction of heavy traffic are of a perishable nature, hauling business not originated on or received from connections in sufficient volume to increase the train load without delaying for more loads, grade reductions or locomotives of greater tractive force may not be justified."

"How about boosters?"

"There may be no economy in equipping locomotives with boosters to increase the ruling grade tractive force. This where the character of the business requires speed over long grades in excess of that at which a booster can be cut in to maintain necessary schedule.

"Building locomotives to fit a standard train over several divisions has its merits in decreasing costs of train classification in intermediate yards."

And the Van Sweringens

In the yearly meeting of the directors of the Missouri Pacific in St. Louis, May 12, the Van Sweringen Brothers showed themselves to be in control of more than 50 per cent of the total voting stock of that carrier. As a result, they nominated and elected eight new directors and let out eight of the old board members.

The Van Sweringen directors elected were: O. P. Van Sweringen, John Sherwin Jr., D. S. Barrett Jr., Leonard P. Ayers, H. G. Dalton, W. W. Reilley, G. A. Tomlinson and Alva Bradley. They took the places formerly held by M. C. Brush, A. R. Graustein, C. E. Ingersoll, H. Hobart Porter, John J. Raskob Jr., Lancaster Williams, Finley J. Shepard and William H. Williams.

Stockholders also changed the by-laws so that, hereafter, board and executive committee meetings may be held either in St. Louis or Cleveland.

L. W. Baldwin, president of the Missouri Pacific Railroad, said, following the meeting:

"I believe the progressive policies of the Missouri Pacific will be continued under Van Sweringen control. I have every reason to believe that they will adopt the same constructive policies in the Missouri Pacific which they have demonstrated in the management of other properties they control. We are entirely in accord with the Van Sweringens. We do not expect to make any change in the present officers."

Advertising the News

We like to tell about the year all the makers of incubators, that is all except *one,* decided not to run their usual copy in the farm papers of Senator Capper at Topeka, Kansas. That was in the fall of 1920 and the spring of 1921. The exception was a manufacturer out in Nebraska. When he heard about all the other chaps' decision he doubled his space in the Capper journals, and as might have been expected, he sold more incubators, about 40 per cent more than ever in his business career.

The principle applying to incubators applies equally to railway supplies. You may have something new that railroads would buy if they ever heard of it, but you might just as well drop it into the sea and forget it unless you tell about it. And the only way to do this is by advertising.

Remember the story about Wanamaker's first day? When he started his first store John Wanamaker wasn't 23. During the first day the new firm sold $24.67 worth of men's collars, cuffs and neckties. John put 67 cents into the cash drawer to make change next day and took the $24 to the office of the *Philadelphia Public Ledger* to pay for an advertisement of the new store. . . . Ten years later his sales were averaging $15,000 a day, and in 1873, 12 years after he opened his store, he had the largest retail clothing business in the United States, spoken of as the most daring in its innovations. . . . Macmillan has just brought out a biography of this genius of the business world—and how much genius in the business world is just sheer good sense in advertising!

It doesn't do much good to run your advertisement once or twice. Wanamaker kept everlastingly at it. People knew he was in business. When times were dull he advertised more than ever because it was needed. And this is a lesson a lot of strange manufacturers need to learn.

Gone Are the Days

Time was, and not so long ago, when a railroad journey meant that until he returned, or at least until he had reached his destination, a man was free from the world at large. He could take along a book or two and enjoy himself to the limit. He wasn't greatly concerned about speed or the lack of it. He was having a real rest. No one could get at him. Between San Francisco and Chicago or New York a man might rearrange his life. He could, if he were so disposed, plan his future, decide upon the details of campaigns political or advertising, write letters to old friends, long deferred, make great decisions, eat and smoke and sleep—safe from intrusion.

Then, tearing away, with ruthless hand, all the delightful seclusion of this restful haven, came the pestilential progressive with the latest news from the stock market. The ball scores, and presently the most sensational news from everywhere was found in all the parlor cars. Morning papers were thrust upon travelers at every division stop. The

WHAT IS HUNT-SPILLER AIR FURNACE GUN IRON

H S G I
Reg. U. S. Trade Mark

H S G I
Reg. U. S. Trade Mark

A special iron made by specialists for the special purpose of resisting wear. Originally developed 100 years ago for the manufacture of guns and further perfected to meet the needs of modern transportation systems.

Use it for the wearing parts of your locomotives

AND SAVE
MONEY - WEAR - DELAY

Hunt-Spiller Representatives will be at Exhibit Space Nos. 258 and 260 at the ARA Atlantic City Conventions. Ask them for further details about our product.

HUNT-SPILLER MFG. CORPORATION
J.G.Platt, Pres. & Gen. Mgr — V.W. Ellet, Vice-President

Office and Works
383 Dorchester Ave. - South Boston, 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 997 Aqueduct Street, Montreal, P. Q.
Export Department: International Rwy. Supply Co., 30 Church Street, New York, N. Y.

PROGRESSIVE OPERATORS

1 *Chicago Surface Lines, Chicago, Ill.*

2 *Brooklyn and Queens Transit Corp., Brooklyn, N.Y.*

3 *Montreal Tramways Company, Montreal, Canada.*

4 *Youngstown Municipal Railway Company, Youngstown, Ohio.*

5 *Union Street Railway Company, New Bedford, Mass.*

6 *Northwestern Pacific Railroad Company, San Fransisto, Calif.*

SPECIFY . . .

Westinghouse Equipment for New Cars and Buses

Following is a list of recent orders:

Philadelphia & Western Rwy. Co.
5 interurban cars, quadruple 535 motors, HL control

Allegheny Valley Street Rwy. Co.
12 interurban cars, quadruple 1425 motors and WN drive, K control

Monongahela West Penn Public Service Co.
3 interurban cars, quadruple 516 motors, K control

Chicago, North shore & Milwaukee Railroad Co.
25 interurban cars, quadruple 557 motors, HL control

Cincinnati & Lake Erie Railroad
10 interurban cars, quadruple 539 motors, HLF control

Northern Indiana Rwy. Inc.
10 interurban cars, quadruple 516 motors, K control

Northwestern Pacific Railroad Company
12 suburban cars, quadruple 557 motors, ALF control

Chicago Surface Lines
60 city cars, quadruple 516 motors,

Altoona & Logan Valley Electric Rwy. Co.
5 city cars, quadruple 510 motors, K control

Scranton Railway Co.
10 city cars, quadruple 510 motors, K-75 control

Newell Bridge & Railway Company
2 city cars, quadruple 508 motors, K control

Delaware Electric Power Company
5 city cars, quadruple 510 motors, K control

North Carolina Public Service Company
5 city cars, quadruple 510 motors, K control

Greenfield & Montague Transportation Area
2 city cars, quadruple 510 motors, K control

Union Street Railway Company, New Bedford, Mass.
12 city cars, quadruple 510 motors, HL control

Lynchburg Traction & Light Co.
20 city cars, quadruple 510 motors, K control

Cleveland Railway Company
100 city cars quadruple 340 motors, HL control

Lorain Street Railway
10 city cars, quadruple 510 motors, K control

Brooklyn & Queens Transit Corporation
100 city cars, quadruple 510 motors, VA control

Youngstown Municipal Railway Company
13 city cars, quadruple 1425 motors and WN Drive

Yakima Valley Transportation Company
3 city cars, quadruple 510 motors, K control

Montreal Tramways Co.
50 city cars, quadruple 510 motors, VA control

Northern Indiana Rwy. Inc.
10 city cars, quadruple 510 motors, K control

Mobile Light & Railroad
3 safety cars, double 510 motors, K control

Lehigh Valley Transit Company
10 city cars, quadruple 510 motors, VA control

United Railways & Electric Company of Baltimore
50 city cars, quadruple 516 motors, VAF control

New Orleans Public Service Inc.
1 trolley bus, two 1426 motors, VA control

Chicago Surface Lines
36 trolley buses, two 1426 motors, VA control

City of Detroit, Dept. of St. Rwys.
6 trolley buses, two 1426 motors, VA control

Board of Transportation of the City of New York
300 subway cars, double 570 motors, ABF control

Ask the nearest Westinghouse office for recommendations on modern transportation apparatus.

Service, prompt and efficient, by a coast-to-coast chain of well-equipped shops

Westinghouse

WESTINGHOUSE ELECTRIC

T 31370

world had discovered, suddenly, that it hadn't been making very good time. Speed, for some crazy reason, was demanded. Life became a feverish, rushing, headlong dash for something, no one seemed to know just what.

And now, omitting any extended reference to the 120-mile an hour schedules of air liners—20 hours between the Pacific Coast and Chicago, 30 hours to New York, 48 hours by rail and air from coast to coast, air mail and express all over the civilized world—setting aside such distracting things as these for the moment, we realize with dismay that the last shred of privacy and rest has been shattered—the train radio broadcast is upon us.

In 1929, the efficient publicity agents tell us, more than 210,000 passengers listened to these broadcasts on the Canadian National Railways. Fifty-four of that company's cars now are equipped with the apparatus, twelve observation lounge cars and 12 compartment cars for transcontinental service are being built. These will be equipped with "all-electric" radio-phonograph combination sets. The programs will be received in the lounge car and relayed to a loud speaker and 36 head sets in that car, as well as 22 head sets in the adjoining compartment car. There will be two head sets in every compartment and single berth compartment, and three in the drawing room.

You can't get away from it. In town, on the farms or in the crowded warrens of great cities, at sea, at the South Pole, night and day, the poor fogy who longs for a bit of quiet must submit to the demands of those who seem to thrive on noise. What worries us, however, is not so much the noise as the quality of it. Who, please, selects the programs for the travelers? Obviously, they can do no dialing. To permit this would mean madness. And if, perchance, a man wishes no news or music or twaddle where may he go to escape the loud speaker? Does the radio operator decide what the passengers are to hear? If so, we see, not far away, the outbreak of rioting on railroad trains. It is sufficiently difficult to adjust temperatures in coaches to suit many persons. Imagine trying to select a radio program to suit 50 or 100 passengers!

One of these days some really progressive, humane passenger department is going to advertise a good reason for using its trains. And this advertisement will read: "No radio on our trains, just peace and quiet and comfort."

Air Traffic Increases

The tremendous increase in air passenger travel in the United States is shown strikingly in the traffic reports of American Airways, Inc., operating company of the Aviation Corporation, for the first four months of the year during which approximately as many passengers were carried as in all of 1929. In these four months, 20,320 passengers flew over the company's lines, compared with 20,659 for all of last year. The travel by air continues to increase steadily, stimulated by low fares and an increasing public confidence in the new swift transportation through the skies.

During April, 6,741 persons flew on the American Airways lines, an increase of 8.9 per cent over the number of passengers in March, which set up a new record for the number of passengers carried by the system in a single month. While the increase in the number of passengers was 8.9 per cent, the passenger revenues for the month mounted 13.2 per cent, indicating passengers are flying longer distances. A study of records for a recent 60-day period showed the average length of air trip on the company's lines to be 274.6 miles. The company's passenger planes, operated by the Universal, Colonial and Southern Air Transport divisions and the Embry-Riddle Co., flew 293,220 miles over 4,199 miles of airways in April.

A Chance for Signal Engineers

The average bulletin or catalog coming to an editor's desk is not a thrilling contribution. As a very definite relief comes one from the General Railway Signal Co., Rochester, N. Y., describing among other interesting things the opportunity that company presents for young men eager for a career as signal engineers.

"Student engineers," says this bulletin, "find here special opportunities in any one of the divisions of electric interlocking, direct-current and alternating-current automatic block signaling, intermittent inductive and continuous inductive automatic train control, car retardation or centralized traffic control. It is hoped, however, that many of the students who elect to come with this company will see the wisdom in becoming proficient in all these divisions.

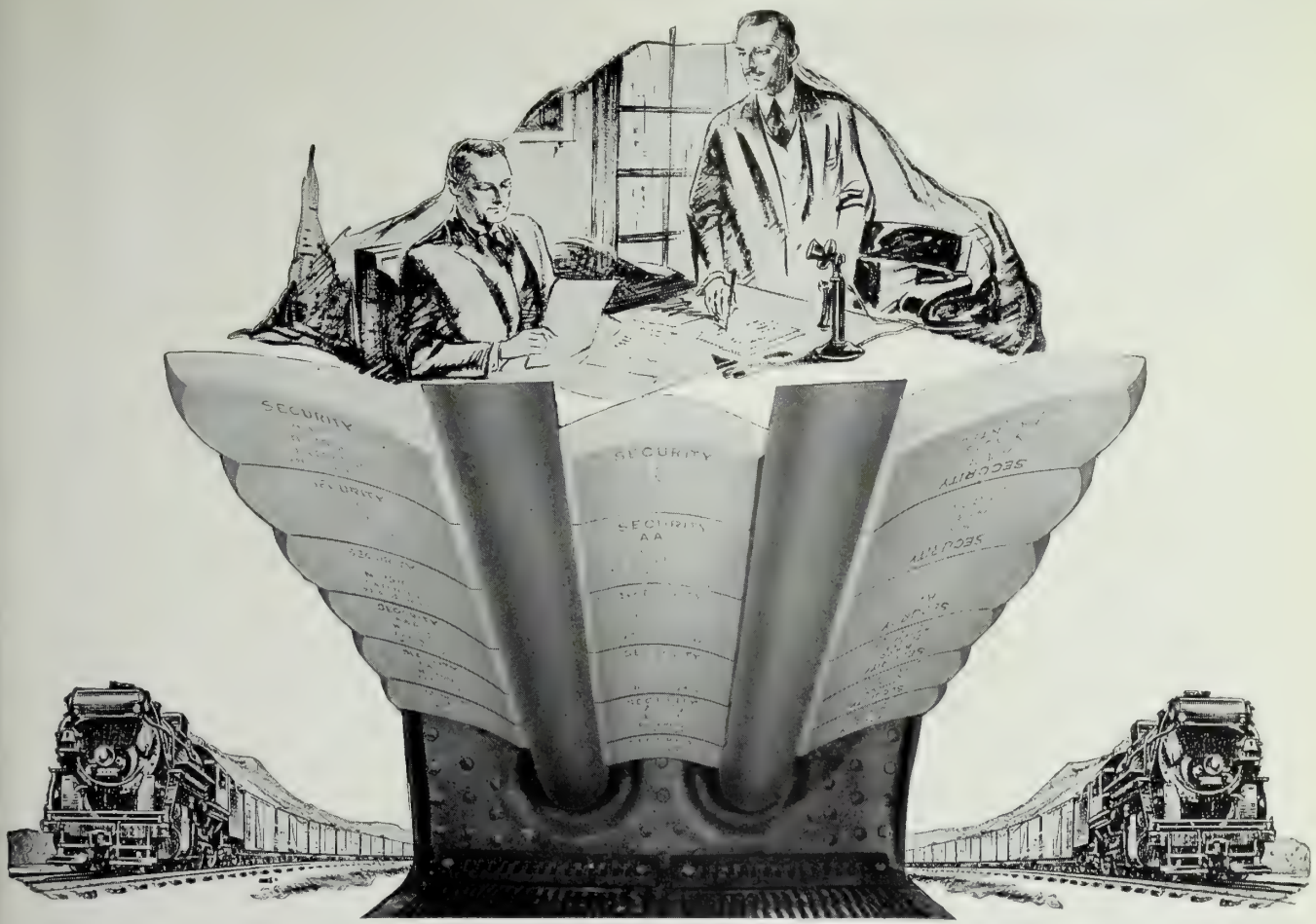
"The student engineer who places prime importance on the matter of financial return during the first years after his graduation, should not consider this course. To give him this training it is necessary to transfer him from one department to another as soon as he has become proficient in the work at hand. As this lessens the possibility of realizing on the training which has been given him up to that point, the company feels that the student should bear a part of the cost for the training experience given. The wages paid will be adequate to meet the reasonable requirements of a young unmarried man. The student usually is started at a minimum rate of 50 cents an hour but the company reserves the right to pay more than this in localities where living expenses are unusually high or other conditions warrant. It is not our custom to pay traveling expenses to new men entering our employ to their first job, but after they have worked through their first assignment, their traveling expenses are paid from one point to another wherever they are directed by their supervisor to report. Further information in regard to the matter of wages will be supplied on request.

"While at Rochester, the students have access to our library. All students, whether on the road or at our works, are eligible to membership in our Student Engineers' Club. This club meets twice a month during the winter, and topics relating to the field of signal engineering are discussed by our leading engineers. Copies of these talks are distributed to all members of this group and every effort is made to help the student progress as rapidly as his ability will permit."

Proverbs XVI—13

Henry Ford, one of the world's most interesting men, said not long ago, "We have single purpose machinery, and we want general purpose men."

We don't believe it. We doubt very much whether general purpose men ever do anything or



What Arch Brick Standardization Means to the Railroads

WHERE one roundhouse is serving several railroads the value of Arch Brick Standardization is emphasized.

Long before the present agitation for engineering standardization, American Arch Company had brought order out of Arch Brick chaos.

Designs and sizes had been simplified. Instead of each railroad having its own design of Arch Brick, a relatively few sizes and designs served all the locomotives of all the railroads of the country. Arch Brick were made interchangeable and a great step toward economy had been taken.

This is just one example of the many ways in which the concentration of the American Arch Company on Arch Brick for 20 years has benefited the railroads.

Harbison-Walker Refractories Co.
Refractory Specialists

American Arch Co.
INCORPORATED
Locomotive Combustion
Specialists

ever have done anything to startle the world. They are handy to have around, as is a husband with a box of tools and the ability to fix things here and there, but the men who have done great things, the men we have met in history whose names and memories are glorious, were not general purpose jacks-of-all-trades. They were men who were going somewhere with a definite purpose in mind, and they kept on going until they arrived, or until they discovered the journey was useless.

Ladd says in his book on Japan that the Mikado, that is the old emperor, wired Admiral Togo, "Find and destroy the Russian fleet."

For many anxious hours, Togo paced his quarter deck, taking up and discarding one plan after another. Then, his mind made up, at last he wired the emperor, "After a thousand different thoughts now one fixed purpose."

You all know, of course, what happened to Russia in that war, and what happened to that particular fleet. If you haven't been a reader of history you have missed this fine example showing just what can be done by men—even little men—with one fixed purpose.

There are already too many general purpose men in the world. No marksman ever made much of an impression on a target with a shot gun. It was the rifle bullet that hit the bull's eye. Of course if you are hunting ducks, a shot gun is a good thing to have, but when you are looking for success, aiming at one particular important point in your future, what you need is a rifle. General purpose men are in the same class with dual purpose cattle. A dual purpose cow is neither a good dairy animal nor a good beef producer. She is just a deadhead boarder.

Judging by what we remember seeing at the Ford motor plant in Detroit practically every valuable workman there had just one job. Mr. Ford himself is an excellent example of a man with a fixed purpose in life, which it is scarcely necessary to say, he has achieved. Mr. Ford is a great and very successful mechanic. The big business organization of which he is the head was erected by competent men whom he employed for that purpose. He didn't do it. Mr. Ford understands his kind of automobile, but he does not shine particularly as a philosopher.

There are a few words in Proverbs XVI—13 to which we should like to draw Mr. Ford's attention. For the benefit of those who have no Bibles, these are the words: "Kings love him that speaketh right."

Mules and Airplanes

We don't know how many persons were killed by mules last year in Missouri, but an insurance company reports the number twice as large as those killed in airplane accidents. The insurance company's report is part of an investigation into the safety of airplane travel, but we find it difficult to see any connection between the two forms of risk. A mule's motor is always in perfect order and, as all Missourians know, it has a kick in it, whereas death in airplane accidents comes most frequently, perhaps, through failure of that important mechanism.

Somewhere in this highly diverting story there is a moral precept, perhaps to Cross Mules Cautiously. Whatever it is we do not believe the comparison will serve to increase airplane travel, or add anything to the Missourians' knowledge of a mule's deadly propensities. You may sit in an airplane until your pants wear out, but anyone who knows anything at all knows that that garment will not last long when a mule expresses its displeasure, especially if your back is turned at the moment toward the works. You may get quite a kick out of travel by air but you must know mules to get the thrill of your life.

The Sportsman

Everyone who has traveled outside the United States and Canada knows that nowhere in the world are there such luxurious passenger trains as in the homeland. In contemplating the continuing decrease in the revenue from that branch of the business, and the growing competition confronting it, one can not withhold admiration for the courage displayed by railroads in providing such comforts for a dwindling traffic. There are no laws requiring such lavish expenditure of money for the public's convenience—and this is about the only item congress has overlooked.

It has been the custom for several years for railroads to place their new and beautiful trains on exhibition in union stations of the great cities where they have been viewed by thousands. John Bernet of the Chesapeake & Ohio, remembering that people outside these centers of population saw such trains only when they flashed through the small towns, displayed a fine sense of human interest and intelligent salesmanship when he determined to send the Sportsman, a handsome new train running between Norfolk and Detroit, on a twenty-one-day tour of the territory through which his road runs. The results justified the effort very completely. Crowds gathered everywhere to see the train; commercial and civic organizations made its visit an event in community life; at least one legislature adopted resolutions thanking the Chesapeake & Ohio for the opportunity afforded the members to inspect the new equipment, and complimented the management "on its progressiveness, foresight, and interest in the welfare of the citizens." Mayors, governors, schools, bands, turned out everywhere to inspect the train. Newspapers published congratulatory editorials and many pictures, with numerous good-natured cartoons depicting certain features. In the most admirable way the road gained invaluable advertising of the kind no company could buy for cash, created untold volumes of good-will, and, in short, did more in three weeks of well-managed showmanship than could possibly have been done in any other way.

In building the Sportsman Mr. Bernet saw to it that space was sacrificed for comfort wherever it could be done. It is in every particular a very handsome train, as handsome as any in the world. It cost a load of money and it ought to bring its own reward. Perhaps it may. We hope so. Instead of wasting time and cash opposing motor vehicles, private and public, Mr. Bernet believes in showing the people that they can, by using his trains, travel more economically, more swiftly and safely, more comfortably, and arrive at their destinations rested and clean, ready for business and not looking like a bunch of tramps.

Baker

In this day of keen competition and narrow profit margins, take nothing for granted. A Baker representative can *prove* that Baker Trucks, Tractors and Cranes can save up to

75% IN MAN-HOURS

in the handling of material.

Baker Industrial Truck Division

of THE BAKER-RAULANG COMPANY, *2180 West 25th St., Cleveland, Ohio*

The Buying Power of Railroads

More Than 163 Millions Spent by the Pennsylvania Alone in 1929

By C. E. Walsh

Pur. Agt. Pennsylvania R.R.

EXCEPT IN the case of those engaged professionally in purchasing work, this extensive and important department of railroading is not usually appreciated by the public. It is, of course, one of the least spectacular aspects of railroading and therefore does not compete in the popular mind with the impressive and romantic features of physical operation, represented in the movement of freight and passenger trains or in unusual feats of engineering.

Nevertheless, railroad purchasing work has many phases of great interest. In view of the immense volume of the transactions which make up the total of railroad buying, its significance to the country as a whole, and to the various forms of our productive industry can scarcely be exaggerated. In fact, buying by the railroads is one of the major supports of American industry. This is demonstrated by the fact that approximately 25 per cent of the combined operating revenues of the railroads in this country, which in recent years have averaged more than six billion dollars, is returned to the industries and mines quickly and directly through the purchase of materials, supplies and locomotive fuel. It is thus easy to imagine the gigantic proportions of the air-pocket which the elimination of railroad buying, amounting to about one and one-half billions a year, would create in the nation's business.

Although this great sum constitutes an enormous buying power in the nation, it does not present the full importance of consumption by the railroads. It does not include other very large purchases made by contractors on railroad construction projects. The railroads' need for basic materials is so great that it is of primary importance to every business man, whose individual success is dependent on the prosperity of the nation at large, that the earnings and credit of the railroads should be sustained in order that their great buying capacity in the national markets should not be impaired.

Part of an address before the Steel Founders' Society of America at Philadelphia.

Steel Shelving for the Storehouse.

Regarded as a unit, the railroads are the greatest and most important buyers in the markets of our country. The most trustworthy estimates show that our railroads buy annually about one-quarter of the country's output of bituminous coal, about 18 per cent of the fuel-oil produced, 20 per cent of all the timber cut, and about 16 per cent of the total iron and steel production.

In 1928 the railroads of the United States bought $302,000,000 worth of soft coal, $95,684,000 worth of crossties, $65,110,000 worth of other timber products, and $92,181,000 of steel rails. In the same year, they spent $25,638,000 for stationery and printing, nearly $9,521,000 for rubber and leather goods, $18,400,000 for electrical materials and more than $2,031,000 for automotive equipment and supplies.

The Pennsylvania Railroad System in its largest aspect, which embraces the Long Island Railroad, purchased materials, supplies and locomotive fuel in 1929 to the extent of $163,000,000. This includes purchases made directly by the railroad and those made indirectly through contractors supplying the material used in construction work. When the figures for the entire country are brought in, it probably will represent about 10 per cent of the total. Eliminating the Long Island Railroad and a few of the smaller companies which we control but do not directly operate, purchases on behalf of the Pennsylvania Railroad and its directly operated lines were $147,000,000. As a result of the system of concentrated buying which we have developed, the total cost of operating the purchasing department represents less than 60 cents in every $100 worth of purchases, a very low buying cost indeed.

Since the termination, in 1920, of the federal control period, the management of the Pennsylvania System has centered its efforts very largely upon greater efficiency and economy in every branch of the work, devising short cuts, eliminating duplications, and standardizing practices wherever possible.

In the case of the purchasing department, we came to the conclusion quite a few years ago that, notwithstanding the complications in our corporate structure, and the necessity for territorial subdivisions of the lines for operating purposes it would be possible to conduct all of the purchasing work in a single department, directed by one head. That is the plan under which we are now working, and it has been in effect since 1924. We buy the materials and supplies, including locomotive fuel, for nearly 100 transportation and other companies, just as if they were merged into one single corporation. We take care of the separate property rights and obligations of each by accounting after the transactions are made. Similarly, we take care of the requirements and needs of the officers in charge of the four main operating subdivisions, by lumping their purchases together, whenever that is possible, and thus obtaining the greater advantages of buying in the largest

(Continued on Page 70)

TEN MILLION MILES OF PROOF!

During 1929, locomotives equipped with Loco Valve Pilots covered more than ten million miles. They established new records for fuel economy, improved acceleration and increased tonnage rating.

During 1930, locomotives equipped with Valve Pilots will do more than thirty million miles. This increase is due to the simple fact that the Loco Valve Pilot, with its accurate indications and tape record, points the way to operating economies which cannot be achieved by any other method.

Correspondence is invited with progressive roads desiring further information.

VALVE PILOT CORPORATION

230 PARK AVENUE NEW YORK

Last Days of the Ferry

(Continued from Page 28)

cilities of the Southern Pacific but will also provide the foundation for one more giant beacon to guide travelers of the air. The railroad will install a complete lighting system at the highest points on the bridge which will be about 158 feet above mean low water on the main spans and 220 feet above mean low water on the towers of the lift span. It will warn and guide aviators flying at night and during heavy fog.

The railroad has the approval of the aviation section of the United States department of commerce for the erection of the lighting system. The central feature of the system will be a 24-inch, 2,000,000-candle power red light which will flash every 30 seconds. Airway code lanterns also will be installed. The code lighting system will, in turn, be supplemented by a marine lighting system for ships plying the upper reaches of San Francisco Bay.

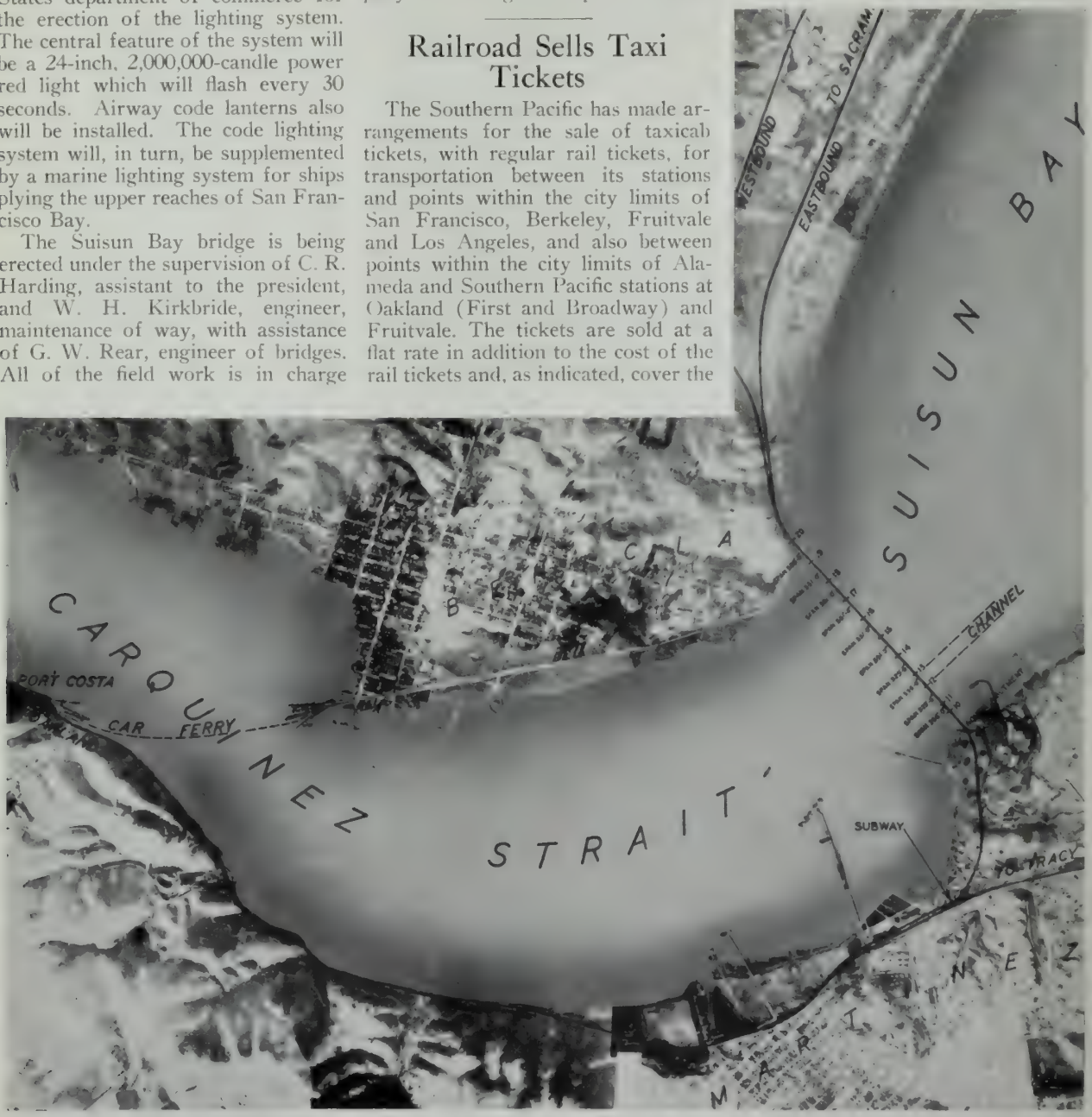
The Suisun Bay bridge is being erected under the supervision of C. R. Harding, assistant to the president, and W. H. Kirkbride, engineer, maintenance of way, with assistance of G. W. Rear, engineer of bridges. All of the field work is in charge of H. I. Benjamin, assistant engineer of bridges. Design of foundation and superstructure is being checked by S. A. Roake, chief designer; Charles M. Kurtz is office engineer.

Moran & Proctor are consulting engineers for foundation work; Waddell & Hardesty are designing the lift span and towers; Ralph Mojeski was consultant in the preliminary study of the project. Sub-structure is being constructed by Siems, Helmers & Shaffner, Inc., of St. Paul, under the direction of N. F. Helmers, vice president; M. F. Clements has been engaged as their consulting engineer. The American Bridge Company is erecting the superstructure.

Railroad Sells Taxi Tickets

The Southern Pacific has made arrangements for the sale of taxicab tickets, with regular rail tickets, for transportation between its stations and points within the city limits of San Francisco, Berkeley, Fruitvale and Los Angeles, and also between points within the city limits of Alameda and Southern Pacific stations at Oakland (First and Broadway) and Fruitvale. The tickets are sold at a flat rate in addition to the cost of the rail tickets and, as indicated, cover the transportation of the passenger to and from the station and any point within the city limits of the respective cities. The rate is materially less than would be incurred under the normal taxi arrangement, according to the announcement. Tickets issued to passengers going to any one of the cities must show the address or hotel at which the passenger wishes to be left.

Buses are to replace four trolley lines now operating in Pawtucket, R. I., under terms of an order by the Rhode Island public utilities commission, granting a petition of the United Electric Railways.



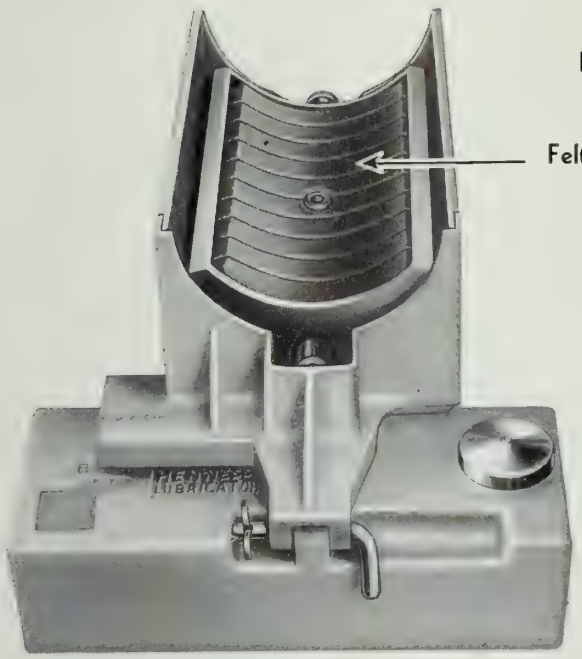
An Aerial View Showing the Situation As the Bridge Builders Faced It; At the Left, Port Costa and the Old Ferry to Benicia; At the Right, Martinez, Track Layout, and the New Bridge.

HOT BOXES?

Mechanical force feed lubrication of locomotive driving, lead truck, and trailer journals is POSITIVE PROTECTION and is available now through installation of

HENNESSY LUBRICATORS

The continuous positive lubrication afforded by Hennessy lubricators makes possible longer engine runs without inter-terminal attention and results in elimination of hot-boxes, reduction in bearing, journal and hub face wear and of terminal delays. Let us show you how.



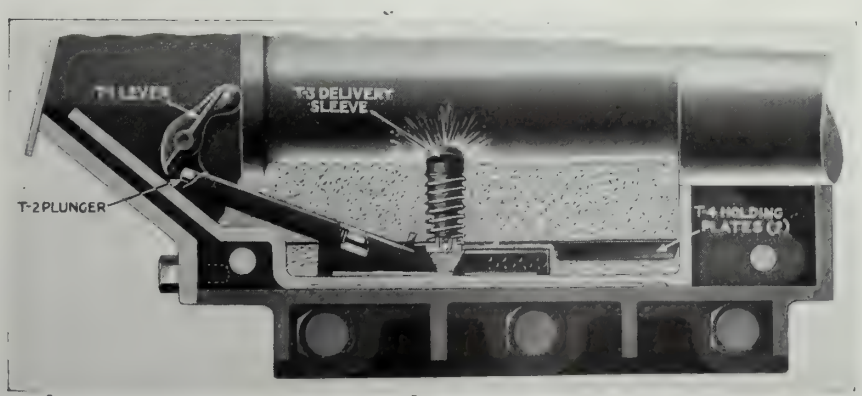
For Driving and Lead Truck Journals

Hennessy lubricators deliver oil of any consistency direct to face of journals. Displace standard cellars without change of any kind. Require a minimum of attention.

HENNESSY LUBRICATOR

At Atlantic City June 18-25

SPACE 411
AISLE 6
Main Floor



For Outside Bearing Trailer Journals

HENNESSY LUBRICATOR CO.

136 Liberty St., New York

20 E. Jackson Blvd., Chicago

From Slowpoke Days to Airplanes

By

Dorothy Hodson

This Boeing Plane Flies From Sacramento to the Missouri River in 14 Hours. In 1849 the Pony Express Took Ten Days for the Same Journey.

FIVE GREAT communication highways, using rails, road, wires or the air, now parallel one another along the Overland Trail of a century ago, with the inauguration of Boeing System's trimotored transport passenger plane service linking San Francisco, Chicago and intermediate cities.

The trail of the Mormons, the covered wagon, the stagecoach and the Pony Express, a route once drenched with the blood of the pioneers who fought Indians, the snows of winter, the heat of deserts and disease, to push the first transcontinental railroad westward, is now spanned by great ships of the air catering largely to passengers.

The establishing of this 20-hour night and day service by the Boeing System, the nation's largest operator in point of mileage flown, brings vividly to the transportation mind the fact that commercial air transport has reached the stage where it must be reckoned with as a passenger carrier as well as for mail and express.

It was eleven years ago that the first mail planes, under government operation, flew from New York to San Francisco. The mail was carried by plane during daylight and placed on trains at night. In order to speed the service still further night service was established July 1, 1924. In July, 1927, the government retired from the operation of the Chicago-San Francisco route and Boeing Air Transport, the low bidder, began operations which have expanded until now it is flying a third of a million miles a month.

The operation of this new service is of interest because the San Francisco route of 2,000 miles calls for flying from sea level to 12,000 feet and at temperatures which have varied 100 degrees on a single trip between the valleys of California and the mountains of Wyoming. It is recognized that ability to operate over this route successfully and profitably has a bearing on the development of commercial air transport generally.

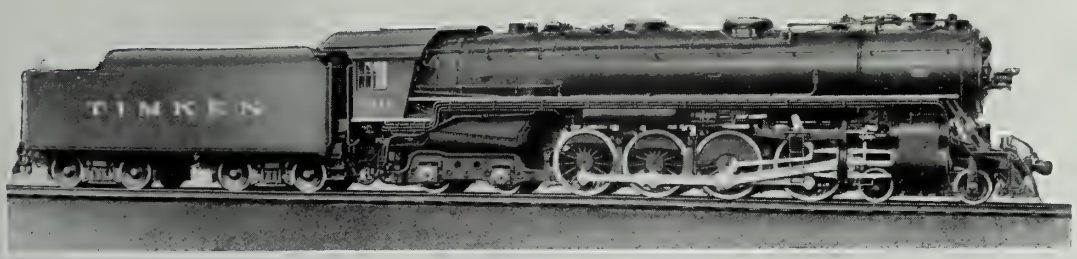
Regularly scheduled transport operations on a long route call not only for proved operating ability but a large capital investment. The fleet of trimotored Boeing transports represents an investment of approximately a million dollars, while large sums have been invested in hangars, depots, downtown ticket offices, an extensive communication system and other necessary aids in the flying of airplanes. Consequently, recent years have witnessed a merger of many small operating companies with the thought in mind of reducing costs and eventually reducing the unit cost of air transport which in turn means a larger volume of business.

Expanded activity into the passenger field of Boeing System climaxes approximately three years of flying with air mail and express over the San Francisco-Chicago and Los Angeles-Seattle routes. At present the Boeing System moves approximately 25 per cent of the nation's air mail. The Boeing System has expanded its passenger facilities because its executives were convinced that travel

SYPHONS

are contributing

to the high efficiency records of the Timken Locomotive

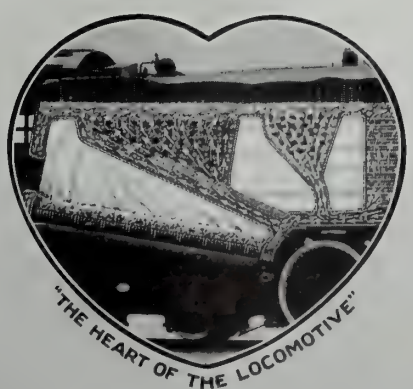


The Timken Locomotive is equipped with two Syphons in the firebox and one in the combustion chamber . . .

—and to Locomotives pulling the finest trains on America's Leading Railroads

Increased Circulation

Reduced Maintenance



Increased Fuel Economy

Increased Safety

LOCOMOTIVE FIREBOX COMPANY
NEW YORK CHICAGO MONTREAL

Here We See a Graphic Comparison Between Forms of Transportation Used Since 1850.

by airplane is certain to increase. The public has never rejected a faster form of transport. Seventy-five per cent of the people who now ride and will ride for the next few years on the Boeing transports are business men. They will pay a higher fare than the railroad tariff to get speed. Some of the time-savings which can be made by airplane over the Boeing System lines, contrasted with train time, are as follows:

From Oakland to:	Plane Hours	Train Hours
Chicago	20	57
Reno	2	8½
Salt Lake	6½	24
Cheyenne	10½	34
Omaha	14½	45
Iowa City	17	52½
Detroit	22	62½
Cleveland	23	65½
New York, (Plane to Cleveland, Train to New York)	34	77
Los Angeles to:		
Seattle	12	44½
San Francisco	4	15
San Francsico to:		
Portland	5½	26
Seattle	8	29½

The Boeing line bisects the United States and is the central highway. It taps strategic rail centers which are also air line centers and, consequently, flies over the populous east-west air route.

Transportation men will appreciate the importance of feeder cities to a backbone airway. At Salt Lake there converge rail and air lines from Southern California, Central California, Seattle, Portland, Tacoma, Spokane, Boise and lines from Montana. At Cheyenne, halfway point on the new transport schedule, passengers from Denver and Colorado points are picked up. At Omaha, passengers are taken on and discharged for Kansas City, St. Louis and points to the South and Southwest. At Chicago, the great rail center of the United States, the Boeing System receives and turns over to various rail and air lines the large travel converging at Chicago.

There are overnight train service connections with Boeing's San Francisco-Chicago service to many important cities, such as Minneapolis, St. Paul, Detroit, Cleveland, Buffalo, Pittsburgh, Columbus, Cincinnati, Louisville, Indianapolis, including all the industrial cities of the Great Lakes region.

Boeing officials realize that the airplane now has practically only speed to sell, and schedules have been arranged so as to transport loads as far as possible with a loss of as few business hours as possible. Under these schedules a Pittsburgh man, for instance, can be transported to or from the Pacific Coast with a loss of only one business day.

It is also of interest to transportation men to know of the Boeing System's results with night flying. It was demonstrated by the air mail that patronage increased when there was continuous night as well as day flying, with the result that the Boeing System which has just completed 9,000,000 miles of flying, has flown 4,600,000 miles at night. It was the first company in the United States to fly trimotored transports at night on long schedules as it has been operating transports from Oakland to Salt Lake City over the mountains at night. It determined that the public would patronize such a service when the planes were flown by responsible pilots over lighted airways. The San Francisco-Chicago transports do not have berths as they would substantially reduce the pay load and cause a fare which would be prohibitive. But the reclining chairs have been arranged so as to provide a maximum of comfort, and as people are traveling to save time they readily accept such conveniences. The cabin is 19 feet long, 6¾ feet high, 5 1/3 feet wide, is insulated and sound-proofed. The upholstered reclining chairs are adjustable. Above each chair is an individual electric light. There is a metal rack for hats and small parcels, and a cloak room. The cabin has hot and cold running water. Seats are arranged in six rows of three each, two seats left of the aisle and a single seat on the right.

The plane can be changed quickly into an aerial postoffice, as the locking devices on all chairs can be released in 15 minutes. As a flying postoffice, with sorting clerk aboard, the plane can carry 175,000 letters. Boeing System now moves 30 per cent of the nation's air mail on its two routes, and carries 25 per cent of all the air mail over the San Francisco-Chicago route.

There are 25 electric lights on the plane. Special night flying equipment in addition to the usual lighting fixtures, has been installed. This includes individual controlled landing lights, retractable within the wings when not in use, and four parachute flares,

This Mail and Express Plane Carries Four-fifths of a Ton, Rises 1,000 Feet a Minute With Full Load, and Makes 142 Miles An Hour.

It proves that the best staybolt iron is by far the most economical in the long run.

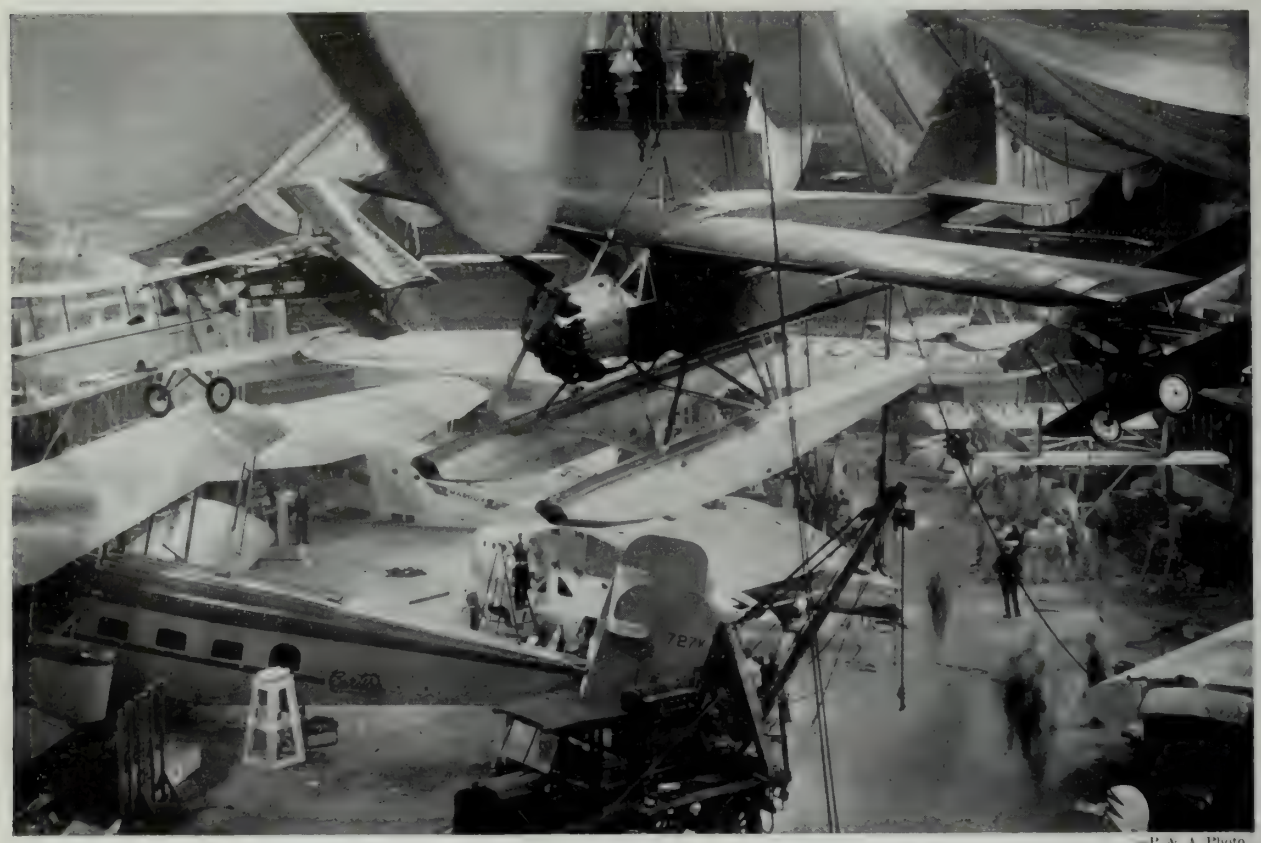
EWALD IRON COMPANY

INCORPORATED

LOUISVILLE

CHICAGO NEW YORK ST. PAUL

"In Use Since Eighteen Forty-Four"



P & A Photo.

A Scene in Madison Square Garden, May 10, Ready for the Opening of the New York Airplane Show.

each of which will illuminate an area of 640 acres for three minutes. Pilots have approximately 90 controls, instruments and control switches to aid them in operating and navigating this aerial cruiser. There are several devices to prevent fire, including a spray system which can be discharged over the engines, and hand fire extinguishers.

The planes of this fleet are the first to be completely bonded and shielded throughout for radiophone installation. The radiophone, which is now in successful operation, enables pilots to talk from an altitude of 12,000 feet to ground stations 200 miles distant. The entire present Boeing System fleet of 55 mail and passenger planes has radiophone installed.

This description visualizes for the transportation man, whether his primary interest lies in rail, steam or stage, that the responsible air transport companies are determined to make the airplane an increasingly important unit of our national scheme of transportation and communication. Officials of the Boeing Company, however, do not regard the airplane as a rival of the railroad, and have no expectation that airplanes of the immediate future will carry freight. They do feel that just as extra fare trains cater to a certain type of travel, the airplane, especially over long distances, will receive a substantial increase in the amount of travel, and that because of the time saved new travel will be created. An illustration of this was afforded at the time of the big game at Stanford when a substantial number of Los Angeles business men left their offices in the morning, saw the game and flew back in the afternoon. Many of these men would not have found the time to make the trip by train.

With commercial air transport planes flying 80,000 miles a day on regular schedules and with practically all large cities linked by air lines which are getting in stronger hands each year, the experience of Boeing System in operating these large transports over the main east-west travelway will be watched with interest generally.

Airplanes Don't Use the Roads

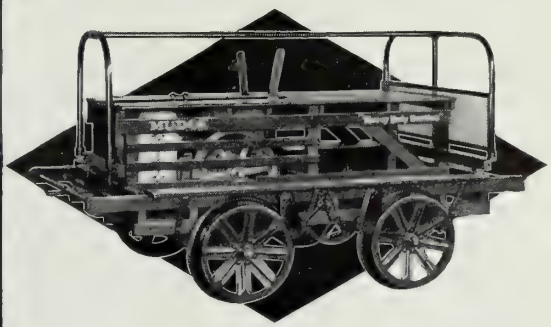
New Hampshire collects no gasoline tax from fuel used in airplanes, motor boats, farm tractors or any other gasoline-propelled machine or vehicle not actually used on the highways, Charles T. Patten, commissioner of the state treasury, recently announced in connection with the campaign to secure exemption for aviation gasoline in all the states. The exemption is provided by means of a rebate paid through the state treasury, Mr. Patten explained. An increase in refunds has been noted, it was pointed out, and while the use of airplanes accounts for a part of the increase, the use of motor boats and tractors has also been a contributing factor.

Atlantic Air Service

Charles E. Mitchell, chairman of the National City Company, and Dr. Hugo Eckener, commander of the Graf Zeppelin, announced the signing of contracts with prominent financial and aircraft interests in the United States and Europe for a lighter-than-air mail and passenger line across the Atlantic.

The contracts were signed by the International Zeppelin Transport Company, formed late last year in Delaware, and by the National City Co., the Goodyear Zeppelin Co., Luftschifdoau Zeppelin (the German Zeppelin Company), the Carbide and Carbon Chemicals Co., a subsidiary of the Union Carbide Co.; the United Aircraft Corpn., the largest aircraft combine in the country, and the Aluminum Company of America.

RESPONSIBILITY



WS2—Heavy Duty Section Car—8-12 h.p.
Seats 10 men—weighs 1040 pounds

MAN'S responsibility extends no further than the dependability of his equipment. A truth the Railroad World recognizes by providing only what has been found the best in actual service.

In Motor Cars this means Fairmont. For 20 years, that name has meant unfailing performance in all kinds of weather, for "the men along the line." And on the maintenance books in the office, that name has consistently stood for Lowest Over-All Cost, considering every factor from purchase price to depreciation. These are FACTS, based, not on isolated cases, but on the great majority! For over half the motor cars in use today are Fairmont products.

The finer the record, the greater is the responsibility to maintain it. Fairmont Motor Cars must deliver Lowest Over-All Cost or the makers are not satisfied.

FAIRMONT RAILWAY MOTORS, INC.

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FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles and safety appliances

Fairmont Mudge Performance on the Job Counts

THE · RAILROAD · WORLD · KNOWS · FAIRMONT

Little Stories About Big Men

Carl R. Gray

NOT MANY persons think of butter as an indicator of business conditions. The mind of the average railroad executive is more likely to think of Wall Street, and the feverish conduct of the nervous humans inhabiting the financial canyons of lower New York when you ask him about the outlook. Of course this is the perfectly natural result of environment. Men directing large properties think in much the same way about business and the things affecting it, but not many of them think of butter.

When someone asked Carl Gray, one day last fall, about business conditions, expecting the customary grave face and the stereotyped answer, not overlooking solemn references to revenue loadings, less-than-car-load movements, traffic density, the net return, and so forth, can you imagine the questioner's embarrassment when the president of the Union Pacific System smiled the smile that has won friends wherever he shows it, and observed quietly that people seemed to be taking smaller pats of butter for their bread nowdays!

This was no casual remark. It had behind it the understanding of a man long interested in the dairy industry. When the securities market began flopping about frantically last October, Mr. Gray said, the country's butter in storage was of approximately normal proportions. From then until the first of the year stocks steadily increased, so that on January 1 they aggregated about 45,000,000 pounds, which was nine times their normal size for that time of the year, Subsequently the excess butter supplies began shrinking. Mr. Gray ascribed the accuracy of this indicator to the unconscious tendency of many millions of people to go easy with the butter when the business outlook is obscure. In the aggregate this skimping amounts to many millions of pounds.

It has always seemed to us that the most charming quality in the character of Carl Gray is a remarkably well-developed sense of humor. By this it is not meant to imply that he is given to outbursts of uproarious laughter. We don't mean that kind of humor. The butter story is a good key to what we have in mind: The man's understanding of human nature, his inborn sympathy with its weaknesses and its strength under trial. And perhaps, after all, just what we do mean is covered in the few words needed to say that he understands men and children, and he likes dogs. The sense of humor shines in his eyes. It trembles in the lines about his well-formed mouth, in the close attention he gives to what you are saying. Greater compliment no man can pay than this, that he hears what you say.

Carl Gray knows how to laugh, the sound, rollicking laugh of the man who likes and appreciates a good story. It isn't a laugh that disturbs you. It is the laugh you don't hear often enough from busy men, the saving grace, the quality in times of stress that staves off a break, the supremely important thing in a hard-worked man's life, not slap-stick comedy that encourages familiarity, but only the laugh that comes from the brain—not the stomach.

Many very important men in high positions have forgotten how to laugh, if they ever knew. Without intending anything of the kind they have let themselves become hard, morose, silent, grouchy to those taking their orders. Some of them have fallen into the funny belief that to laugh heartily once in a while, to encourage some employe unfortunately exposed to their bad disposition, to show a bit of cheerfulness is to lower what they imagine is dignity. One of the chief handicaps under which this kind of men exist is the unsuspected vacuum in brain cells that should be filled with good reading. Nothing, perhaps, is so certain to convert a man laboring under a false estimate of his own importance, as the reading of biography—the lives of really big men who have done great deeds. For one thing, such a reader will discover that most great men, clear back to the days of Plato, believed in laughter, good temper and cheerfulness as necessary to actual success—for of what value is success if you achieve it but lose your friends? "Win hearts," said Lord Burleigh to the bad-tempered Queen Elizabeth, "and you will have people's purses at your command." Charles Lamb said a laugh is worth a hundred groans in any market. Carl Gray subscribes to that standard of life.

The first thing you learn about the head of the Union Pacific family is his liking for books. We have never been in his home in Omaha, but if what we saw in his business car is any indication of his state of mind

Realizing the Necessity of Preserving the Boiler Efficiency of Modern Locomotives, not only in Supplying Good Water to the Boilers, but in Relieving the Boiler of Suspended Matter, we will have on Exhibit at our Booth at Atlantic City, Various Mechanical Devices to Assist our Chemicals to Attain that End.

THE BIRD-ARCHER COMPANY

New York Chicago Philadelphia St. Louis

The Bird-Archer Co. (Ltd.) Montreal

that safe retreat must be a mine of good books. We have ridden over the line with him, from the Pacific Coast to Omaha in days gone by, and therefore we ought to know. We have sat with him at the rear windows of his business car, and talking or listening we have seen him reach up suddenly to the recess near the ceiling and produce, magically, books worth reading. We have seen his patience sorely tried as when, for instance, the train was stopped outside of Pocatello because of hot boxes—it was during the time of the shopmen's strike; about the twilight hour. "Yes," said the troubled flagman, "someone put sand in the journals." Some executives would have hit the ceiling, figuratively, but all Carl Gray said, with a whimsical smile, was "Well, by George!"

Mr. Gray has long been a sincere student of Civil War history, and the result is apparent in his conversation. He knows more about the battles of that conflict than anyone we have ever met; but he likes all history and biography, and he has a distracting way of pointing out the inaccuracies of authors whose sources probably were not so carefully chosen as his own. His father was a colonel in the Confederate army which may account for his military turn. The national guard interested him first 35 years ago in Missouri, and he served for two years as captain of a company in that state noted for its precision in drill, marksmanship and good behavior. It probably was in this part of his life that friends noticed his fine qualities as a leader instead of as a driver of men, a trait still apparent in his railroad associations, for he works as hard or harder than others in his organization. He is a stickler for fair play and a strong believer in the square deal.

There are only two or three characteristics or peculiarities of Carl Gray to which we take exception. He literally eats up statistics, for one thing, but he can talk about them and make you like it. He doesn't play golf, ride horses or shoot things, and as to fishing he declares that if a fish kept its mouth shut it never would get into trouble. He has a summer home at Pleasant Point, Maine, 14 miles from Thomaston, and there he may be found every August. His mother came from Cushing, a mile from Pleasant Point which doubtless accounts for the fact that he is related to almost everyone in Knox County. Most men step swiftly aside when relatives show up but Carl Gray seems to find no greater pleasure than in gathering droves of them about him, up in his Maine retreat, but especially his grandchildren. One of his sons, Russell, is a builder of yachts called "Gray Boats" at Thomaston, and another, Howard, is a physician now enjoying a three-year fellowship in the May clinic at Rochester. Carl Gray, Jr., as railroad men know, is vice president and general manager of the Chicago, St. Paul, Minneapolis & Omaha. Finally, you get a glimpse into this executive's mental workings when you read his

L. A. Downs

answer to a reporter's question, not long ago: What have you accomplished in the ten years that you have been president of the Union Pacific?

"I have spent one hundred and sixty-six million dollars in capital improvements," said Mr. Gray.

A good many railroad leaders have said he is the greatest railroad man in the country. One thing is certain, he has an orderly mind, and this is a jewel of rare worth. He is a western man. He was born at Princeton, Ark., September 28, 1867, got the foundation for his education in the Industrial University of that state, and married a Kansas girl, Harriette Flora, at Oswego.

A railroad may be said to be composed of a body and a soul," says Lawrence A. Downs, president of the Illinois Central Railroad Co., in one of his monthly messages in that company's magazine; and here you get a peek into the workings of a busy executive's thinking machine.

"The first is the railway property," he goes on. "This consists of the engines, cars, tracks, tools, machinery and buildings—things of little value except as they are wisely used in the production of transportation. The second is the moving spirit, consisting of the employes who animate the railroad and give to it character and ideals.

"A great deal depends upon the ability and integrity of railway employes. The service they produce through the utilization of railway property is one of the mainstays of our civilization. Without their ministration our entire fabric of production, manufacture and distribution would collapse. Daily the railway employes of this country must handle safely, efficiently and economically railway property representing an investment of approximately $13,000 for every employe, and daily they must safeguard and expedite the movement of more than two million passengers, and shipments worth about two billion dollars.

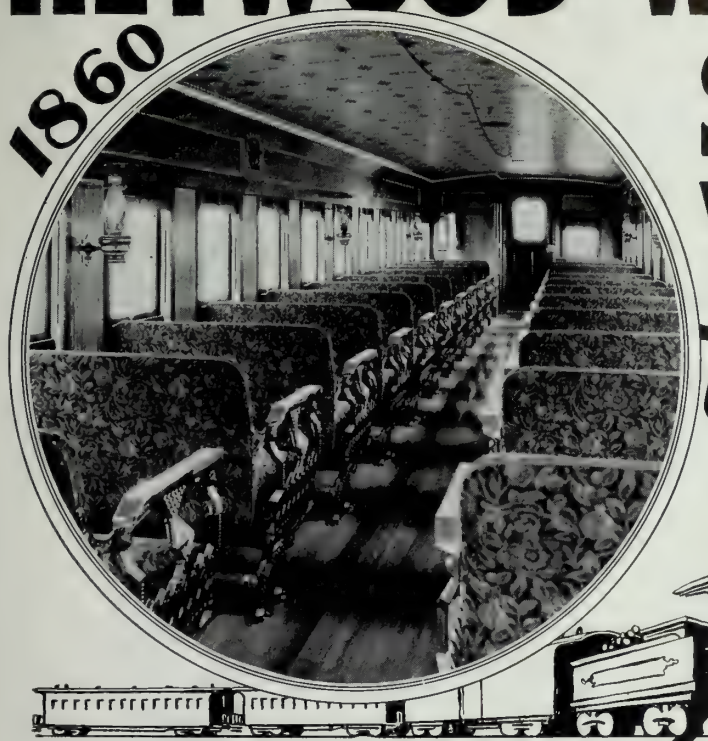
"Personal responsibility of a highly exacting sort is the lot of every railway employe. Team work and willingness to serve are essential—they should be bred in the bone. With so much dependent upon them, is it any wonder that railway workers are inclined to regard their railway employment as a mark of distinction? This attitude toward their calling is true not only of employes engaged in the more highly specialized branches of railway work but also of those whose occupations differ little, if at all, from work in other fields.

"Every railroad is measured by the character of its employes, as reflected in the service the railroad provides. Upon all the employes to some extent, but more especially upon those who come in direct contact with the public, depends the reputation of the railroad. It is no exaggeration to say that the employes stand for the railroad in the public mind."

Mr. Downs certainly ought to know what makes the railroad machine click properly. He is what we call an "engineering president" to indicate the kind of training upon which he has built the superstructure fitting him for the important place he now holds in the world of transportation. Like other executives similarly trained he started his working career as a rodman, and he started it promptly after his graduation from the College of Engineering at Purdue University.

That was in 1894 when Mr. Downs was 22. The Vandalia paid him $40 a month for his services, but despite

HEYWOOD-WAKEFIELD SEATS WERE POPULAR then



THE oil-lighted day coach shown above was reproduced by Mr. Ford for the famous Edison jubilee train. The chairs were cast from an old Heywood-Wakefield pattern used 70 years ago. Below, to the right, is a reproduction of a coach on the Aristocrat—the Burlington's crack Chicago-to-Denver flyer. The luxurious Heywood-Wakefield seats in the C. B. & Q. day coaches not only recline to 4 restful positions, but also rotate on a small radius. From 1860 to 1930, Heywood-Wakefield has originated one improvement after another on railroad seats. Ask for information about our latest designs.

AT THE CONVENTION, it will be well worth your while to inspect some of the new types of Heywood-Wakefield Railroad Seating at Booths 130, 132, 134, and 136.

they're even more popular now

this liberality it couldn't keep him long. In two years he left the Vandalia flat, joined the Illinois Central for $60 a month, and so far as this history is concerned that was his last shift. Now, 34 years afterward, he is at the top—and what has become of the Vandalia whose thoughtless management let him escape? You can't find it on the map. Long ago it was gobbled up, or down if you prefer, by the Pennsylvania System, and the chain he carried, the stakes he drove, the tacks he hammered could not be found. Head of a great railroad system having 7,000 miles of line in 14 states, and 60,000 employes every one of them calling him Larry, at least behind his back.

He was born at Greencastle, Indiana, and there he attended public school, St. Paul's Academy and DePauw University before he entered Purdue. His four years in that institution gave him the opportunity to acquire, in addition to a high degree of engineering skill, something of a reputation as an athlete, and much popularity in other student activities. He played football with a great deal of success, making the varsity team. He sang in the Glee Club. He studied public speaking, and engaged in debates and other forensic contests of the university. And he became a member of Sigma Chi. Within six months after he joined the Illinois Central System Mr. Downs was promoted from rodman to instrumentman, and a year later he was assistant engineer in the roadway department.

EVERY TIME we examine the records of such men as L. A. Downs, when we think over the hard jobs they handled, the economic depression through which they were compelled to live on forty or fifty dollars a month, the studying they had to do to supplement the things taught them in college—building on the foundation—when we notice how they were selected for the better places, and how they kept on going up and up, it gives us severe pains to see newspapers broadcasting such flapdoodle as that charged to the president of a mighty corporation, a few weeks ago, in an interview.

"It isn't work, it's pull or a lucky turn that gets men up to the high positions," this executive is declared to have said. Well, having known that particular executive in his youthful days we are bound to subscribe to his gospel, but only so far as he, personally, was concerned. No more destructive reading matter could have been published than was contained in that interview—destructive and discouraging.

It isn't true. Men *have* reached the top through the help of influence, political or neponic, but not often have they stayed there; and if they did stick they were seldom worth their salaries. You may search the

Hale Holden, Left, Chairman, Executive Committee, Southern Pacific, and Paul Shoup, President. A New Potrait, Taken Recently At Pebble Beach, Cal.

ranks of railroaders from Stephenson's day to next week without finding many of Luck's favorites doing anything important for the world. Work — hard and constant — does bring its own reward. Obviously all the first class hustlers on a railroad can't be president, but you may safely wager your dearest possession that the man who is promoted from the ranks, time after time, until he gets where he can't be raised any higher, is the man best fitted for the place.

When he was only 26 years old in 1898 Larry Downs was a roadmaster responsible for the maintenance of track and other fixed property on an operating division. In the next nine years he held the same position on five divisions, each of them successively more important. He made an outstanding record for economical, efficient administration. Perhaps you think someone wasn't watching him. Anyway, in 1907 he became assistant chief engineer of maintenance of way for the entire system. The only Luck you can find in this lies in the fact that Larry Downs was ready, fully prepared for the job just a little bit farther along.

Three years later, Mr. Downs sensed greater opportunities for development and advancement in the transportation department of the railroad and accordingly suggested a transfer. The company appointed him division superintendent, and in this capacity he served on three successive and increasingly important divisions. His success as a superintendent again won him advancement and in 1915 he became general superintendent of the system's southern lines with headquarters in New Orleans. Two years later he was transferred to Chicago as general superintendent of the northern lines.

Mr. Downs's responsibilities were again increased in 1919 by his promotion to the post of assistant general manager of the entire system. This was during federal control of the railroads so that his position then corresponded to general manager of the lines today. Still another advancement came a year later when he was elected vice president and general manager of the Central of Georgia, owned by the Illinois Central. He became president of the Georgia road in 1924 and of its subsidiary, the Ocean Steamship Company of Savannah, which operates boats between Savannah, New York and Boston.

MR. DOWNS was recalled to the parent road to become its president in September, 1926, when Charles H. Markham retired from the presidency to become chairman of the board.

Despite the fact that he has been out of active engineering work for years Mr. Downs retains a lively interest in that phase of railway operation. He has occupied the highest post of honor among railway engineers, serving as president in 1921-22 of the American Railway Engineering Association, of which he is a charter member. Another honor was accorded him when he was selected as American delegate to the convention of the International Railway Congress at Rome in 1922. Mr. Downs is also a member of the American Society of Engineers.

Mr. Downs considers it a mistaken idea that genius is essential to success in his or any other line of work. He believes success is within the reach of any man with ordinary ability and well-rounded training who applies

Mt. Vernon Quality Cars

CAN BE BUILT ONLY BY MT. VERNON CAR MFG. CO.

Some folk think a freight car is just an assembly of steel and wood and specialties, built to a specification. But every man in the Mt. Vernon organization, from riveter to president, puts the best he has into each Mt. Vernon car. Every man is interested in the car he builds—it's a living thing made to run and work for the road that buys it.

Better cars than Mt. Vernon Quality Cars just can't be built. Remember that when buying your next lot of cars.

Our wonderful up to the minute shops and organization in the very heart of the country assure real service in repairing as well as in building cars.

MT. VERNON CAR MFG. CO.

MT. VERNON, ILL.

GIMMIE FIVE BROTHER! YOU'RE A REAL SPORT AND I'M FOR YOU!
THE SPORTSMAN
LUXURIOUS RAILWAY TRAVEL
C&O
SOMETHING TELLS ME THIS BABY IS GOING TO GIVE US A RUN FOR OUR MONEY!
BUSSES
YOU SAID IT!
AUTOS
FRED O. SEIBEL

Seibel, in The Richmond Times-Dispatch

How One Southern Newspaper Welcomed the Chesapeake & Ohio's New Train, The Sportsman.

himself to the business of making the most of his opportunities. Standards in the business world, he says, are based on the ordinary man, not the exceptional. The man whose performance stands out above the rest, who knows how to bring this fact quietly but effectively to the attention of his superiors, if, perchance, they haven't been observant, is the one who receives recognition and advancement. He doesn't place much reliance in the old adage about hitching one's wagon to a star. He believes it is better to select and then strive for the goal just ahead. When that is attained there is another just ahead, and a goal nearer at hand is more conducive to effort than one remote and indistinct in the future. He admits that when he began working for a railroad he had no idea of ever becoming president. His ambition always was fixed on the job just ahead. As a rodman he wanted to be an instrumentman, and so, while striving to be a better rodman he learned all there was to know about the work of an instrumentman. When he became an instrumentman he set his sights on the job just ahead, an assistant engineer's position, and so on. How well his method works in the case of one who has the requisite ability, energy and perseverance to succeed is shown by the record.

Mr. Downs believes every man needs recreation, holding that the man who gets through his work by closing time and then goes in for some form of outdoor exercise does more and better work in the long run than the desk slave. And he sets his associates a good example in this respect. His golf clubs are Flossmoor, Old Elm, Exmoor and South Shore, all of which, by the way, are served by the Illinois Central electric lines. What his score may be is not essential to this truthful tale. When Purdue plays an important game he can generally be found in the grandstand rooting for his Alma Mater. Bridge is another favorite diversion of his. Mr. Downs married Miss Ida May Mulligan of Pembroke, Ontario, in 1901. He has one daughter, Mary Katherine. They live at the Drake Hotel in Chicago.

The Finest Citizen

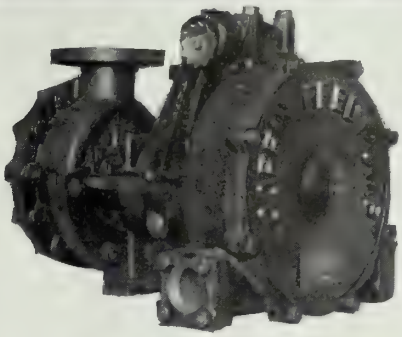
No man can be made an efficient railroad man overnight. It requires years of specific training. In no other business is so much responsibility thrown upon the individual employe as in railroading. In no other business do we look to the individual employe for so much exercise of initiative, judgment and common sense. This very fact is one of the reasons why railroad employes, by and large, represent the finest type of American citizens.—*P. T. White, General Superintendent of the Big Four.*

Trespass in the Air

A Pennsylvania court has held that the flight of an airplane over land marked "no trespassing" was not trespass, but the supreme court of Massachusetts has just handed down an opinion that while air navigation is entitled to its legal rights, it cannot infringe upon the legal rights of others. The minimum height of 500 feet fixed by a Massachusetts statute, the court holds, cannot be regarded as indicating an improper exercise of the police power. Just as the riparian rights vary in various states so will the "air rights" of property owners be given various interpretations. If the 500-foot limit becomes universal, it will mean that airports shall be of such extent that the flyer must reach an altitude of 500 feet before he crosses the boundary line of the flying field. The discussion points an added necessity for standard laws in all states for air traffic.

Railroads in the hands of receivers at the end of 1929 numbered 31, with 5,261 miles of line. At the end of 1920 there were 61 different roads in receivers' hands, with 16,290 miles of line.

About 40 per cent of the accidents to motor cars at grade crossings in the state of Wisconsin last year were caused by motorists driving into the sides of trains, some of which were standing still at the time the accident occurred. Approximately one-half the accidents occurred at crossings where there was absolutely no obstruction to view.



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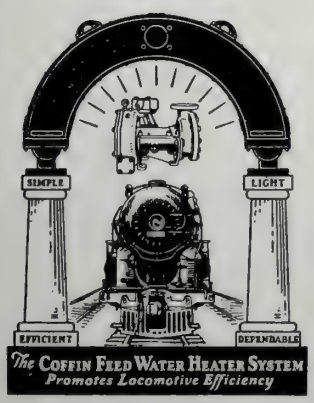
WHEN appropriations are limited and new power is needed, feed water heating offers a source of revenue from which additional power can be purchased out of earnings.

The net fuel savings effected in one year by the Coffin Feed Water Heater System on thirty five engines equals the purchase price of a modern locomotive. In addition, you secure the intangible value of increased boiler capacity at speeds; of longer runs between stops for fuel and water; of more efficient locomotive operation.

It pays to apply feed water heaters because they save as they serve.



Trade Mark Reg. U. S. Pat. Off.

See the Coffin exhibit at the Atlantic City Convention— Booths Nos. 32 and 103.

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CANADIAN REPRESENTATIVE: *Franklin Railway Supply Company, Ltd., Montreal, P. Q., Canada*
FOREIGN REPRESENTATIVE: *International Railway Supply Company, New York, N. Y.*

Thousands of Things in His Care

The Storekeeper's Little List

By F. E. Cragin

Gen. Storekeeper, L. A. & S. L.

Everything As Neat As the Well Known Pin, in the L. A. & S. L. Stores At Los Angeles.

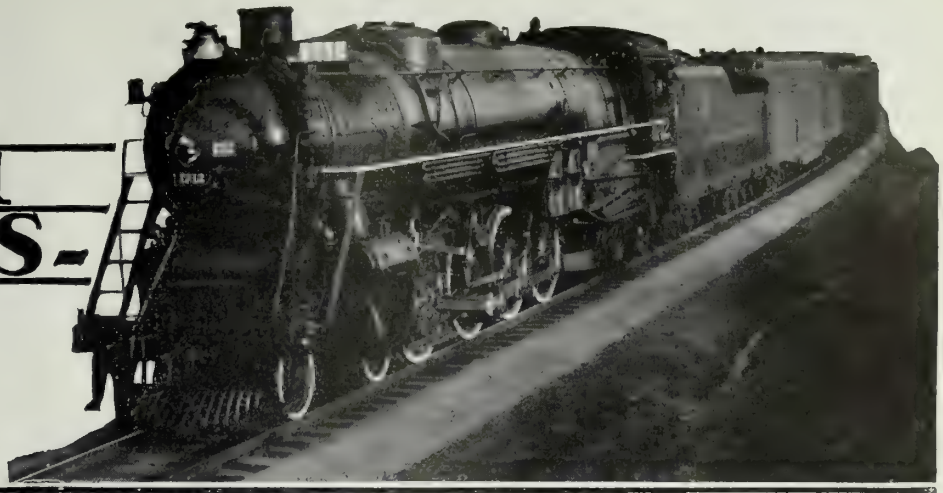
OF ALL THE many departments involved in operating a railroad, every one functioning in its proper place, the stores department is one which must be considered of the utmost importance. Upon it depends entirely the source of other units of the railroad in obtaining their materials and supplies with which to carry on their activities. This, particularly, is true of the mechanical, car, bridge and building, roadway, signal, engineering and transportation, and other similar departments.

The uninformed have no conception of the magnitude of the work involved in controlling a stock of materials consisting of approximately 82,000 items, segregated into 52 material classes. The Union Pacific controls the stocks through the medium of stock books, which are maintained by the sectional storekeepers under sectional classification arrangements. In other words, a certain number of classes of materials are taken into consideration, and as a group termed a "section." The materials included in the various classes are listed in the stock books, which the sectional storekeeper must keep up; that is, it is part of his duties to see that a proper stock, generally a 90 days' supply, is on hand at all times. Every month, at a designated time, the sectional storekeeper, with the assistance of his helper, checks his material, entering in the stock book the quantity on hand, thus giving him a basis upon which to place orders to replenish his stock when necessary. This storekeeper takes into consideration also the average yearly monthly consumption as a guide.

All materials of a smaller nature, such as air brake material, electrical material, bolts, screws, are stored in standard racks which are labeled showing the description of the material. The "unit piling tray" system is used. In following this method, the materials are placed on metal trays to which metal markers are attached showing the number of pieces therein. Immediately above the first tray a second tray is placed, indicating the accumulative count of the number of pieces the two trays contain. A third tray is placed immediately above, and so on. In following this method it expedites the taking of the monthly and annual inventory, and forms the sectional storekeeper's accumulative count at all times.

Materials of a larger nature, such as car axles, tires, heavy castings, track material, signal material, are placed on unit platforms distributed throughout the material yard. Adjacent to these are metal markers on which is shown the full description of the material. On all large items, such as locomotive cylinders on fire boxes, the description and cost are either stenciled thereon, or a marker arranged carrying the full details of the specific material. Rail is piled on "rail skids", and the accumulative count stenciled on each tier; thus the top row indicates the total number of feet in the pile. Every precaution is taken to see that exposed materials are properly sprayed or oiled, to prevent deterioration. Every possible method is used properly to care for and control the quantities of materials carried.

Requisitions for material must be fully approved before materials are delivered and record is made of the requisition when received. After being checked by the storekeeper or his duly authorized representative, the requisition is passed to the sectional storekeeper for necessary attention. This storekeeper arranges to fill the requisition, which is picked up by the helpers and delivered to the shipping room with the requisition; the former for shipment, the latter to be invoiced and charged to the department receiving the material. The requisition,



1101 TONS-

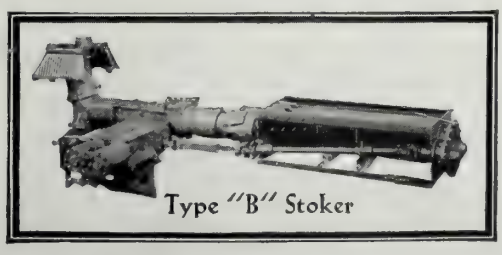
OVER AN AVERAGE GRADE OF 1.22% AT 17.3 MILES PER HOUR

On the Denver & Rio Grande Western from Helper to Soldier Summit — a distance of 24.9 miles with an average grade of 1.22% — the 4-8-4 type locomotive hauled 12 cars weighing 779 tons at an average speed of 17.3 M.P.H.

This section of the run between Denver and Salt Lake City has a ruling grade of 2.4% and is 9 miles long averaging 1.93% with a maximum grade.

As measured by the Dynamometer Car the maximum draw-bar horsepower was 2920 and was developed at a speed of 39 miles per hour. This is equivalent to a cylinder horsepower of 3840.

These stoker fired locomotives emphasize the advantages of high sustained capacity due to stoker firing, which enables handling the heaviest trains at maximum speeds.



Type "B" Stoker

The Standard Stoker Company, Inc.

New York Chicago Erie

In the Store Room of the Pullman Company in Chicago.

in case it is complete, is then forwarded to the office for file, or in case all items have not been shipped, a back order made, and the same procedure followed as in the first instance. The invoice is passed to the accounting bureau for pricing and charging out in the accounts.

When it is desired that materials be ordered between monthly inventories the sectional storekeeper prepares what is known as a "floor sheet," or an order on the requisition clerk, who prepared a requisition on the purchasing department. The requisition clerk, in preparing requisitions on the purchasing agent, gives the receiving clerk a copy of such requisition for his information, and against which he may check the materials when they are received. The original purchase requisition is forwarded to the purchasing agent for handling. On this orders are placed with outside firms for delivery of the material to the store, this, of course, being supplementary to monthly orders placed regularly following monthly inventories which are handled on scheduled dates throughout the month for various classes of material.

In receiving materials, the receiving clerk checks the incoming materials with the billing or shipping notices, to insure that materials have been received as ordered, and then covers the shipment with a receiving report, which is forwarded to the office. On the strength of this the shipper's invoice bill is passed through the accounts for payment.

There are various means by which materials are issued from stock, such as by the stores delivery system to the shops, enginehouse and other adjacent buildings; by the supply train, which makes a trip over the main line every 60 days; by delivering over the counter direct to the person calling for items, or shipment by local freight. In the event material is handled by our stores delivery foreman, the means of transportation is by trucks or tractors, trips to the shops being made p e r i o d i c a l l y throughout the day. Requisitions are picked up at each delivery in receptacles provided for this purpose, in convenient places in the shops. In this way there is no delay to the shops in receiving the materials ordered. For materials shipped by the supply train, requisitions are accumulated from time to time, and arrangements for filling and delivery are performed by a supply train storekeeper, who works in conjunction with other sectional storekeepers at the main store. Materials shipped by local freight are handled through our shipping room, loaded to the cars at the store's platform, and billed direct to the various store points on the line.

Many second hand or scrap items of materials are received from the shops and from off the line. These are reconditioned at our reclamation plant, and again re-issued from stock.

Scrap materials are accumulated and listed on a monthly form, which is submitted to our purchasing agent for the purpose of sale, on receipt of which, scrap materials are loaded and bill made against the purchaser to cover.

All materials are segregated into 52 classes. Descriptions are passed through a register, and finally abstracted to a statement representing the material on hand, received and issued, this report reflecting the book value of the materials on hand. A physical inventory is taken every year of all materials and supplies on hand, at which time an actual count or measurement is made, which is listed on inventory sheets, and the aggregate total compared with the book figures, the difference being written off to operating expense or other accounts. On this unit of the Union Pacific, the L. A. & S. L., the value of materials handled yearly amounts to approximately $19,241,000, of which our disbursements amount to $9,676,677.

Useful in California Winters

A chemical cooling process for aircraft equipped with water-cooled engines has been developed at the laboratories of the army air corps material division at Wilbur Wright Field, near Dayton.

The exact combination of the chemical formula for this cooling agency, which is a liquid, as yet has not been made public though the constituents can be bought in the open market at relatively reasonable prices. But the war department promises it will make the formula public as soon as final tests are completed.

Only four and one-half gallons of the chemical cooler are needed in place of about eighteen gallons of water—a reduction of eighty-four pounds.

The decreased quantity of cooling fluid permits the use of a radiator one-fourth the size of the type now in use.

WEST DISINFECTING COMPANY

FOR SANITATION
AND SERVICE

« « «

DISINFECTANTS

DEODORANTS

LIQUID SOAPS

SOAPARATUS

PAPER TOWELS

SANISERVIS
TOWEL VENDORS

CLEANSERS

POLISHES

KOTEX VENDORS

THE WEST DISINFECTING COMPANY HAS, FOR FORTY-SEVEN YEARS, BEEN ENGAGED IN THE MANUFACTURE AND DISTRIBUTION OF STANDARDIZED PRODUCTS FOR THE PROMOTION OF SANITATION. DISINFECTANTS WERE FORMERLY USED ONLY AFTER DISEASE WAS PREVALENT; NOW THE GREATER PART IS USED AS A DAILY ROUTINE IN THE PREVENTION OF DISEASE AND IN MAINTAINING HEALTHY CONDITIONS.

THE RAILROAD DEPARTMENT OF THE WEST DISINFECTING COMPANY IS MADE UP OF MEN BORN AND BRED IN CLOSE CONTACT WITH RAILROADS AND THEY KNOW SANITATION THROUGH THEIR LONG AND INTIMATE ASSOCIATION WITH BOTH.

For years these men have been making surveys of sanitary conditions on railroads. This aids them in determining the proper materials necessary at the various distributing points. It enables them also to instruct men using the materials as to their proper application. Many railroads have checked waste and prevented neglect through these surveys.

IN OTHER WORDS, THE RESULT OF OUR STUDY IS TO GIVE YOU EXACTLY WHAT YOU REQUIRE AT THE SMALLEST POSSIBLE COST.

Factories in the United States and Canada
Home Office — 16 Barn St., Long Island City, New York
Railroad Department — Railway Exchange Bldg., Chicago
Branches in 42 Principal Cities

Miniature of the New Passenger Station of the Chicago, Aurora & Elgin Electric Ry. at Glen Ellyn, Illinois.

Buying Power of Railroads

(Continued from Page 48)

volume practicable at every single transaction.

In a great railroad system like the Pennsylvania, there are thousands of men in official or supervisory positions who are constantly in need of materials and supplies in carrying on the work under their charge. It seems to be inherent in human nature for everyone to think that he is a good buyer. Consequently, if the buying work of a system like ours were not closely controlled, we should have thousands of persons doing the purchasing without any regard whatever to uniformity, to standards or to the advantages of mass purchasing; and what is of equal importance, the work would be done totally without the assistance resulting from expert knowledge. As a matter of fact, the buying faculty in its highest forms, just like the faculty of selling or of administrative organization, must be cultivated and developed. To attain to the more advanced degrees of skill, years of experience are required. No system of local purchasing ever would give a large corporation the benefit of expert purchasing knowledge, which results from concentration of the work. Under our plan of purchasing, with the immense volume of supplies and materials which are constantly required, it is possible for our buyers to become experts in certain groups and classes of purchases. They develop special knowledge with respect to the materials or supplies themselves, the customs governing their markets and the personal characteristics of those who are engaged in their manufacture and sale. All of these are most important advantages in buying skillfully and intelligently.

The Pennsylvania Railroad System, as you know, is divided into four principal operating subdivisions. Each of these is headed by a vice president with subordinate officers under his jurisdiction. Let us assume that in one of these regions a certain material of a certain grade is being regularly used for a certain purpose. Then let us suppose we find that the other three regions are specifying, for the same purposes, material of a more expensive grade. What the purchasing department is always trying to do is to get at the most favorable price for the material which will do the job properly taking into consideration all related factors, such as quality, deliveries, service, etc. Therefore, if we find such a situation we think there is at least a fair presumption that the officers in the region using the least expensive material are right and that the others are not exercising as much economy and efficiency as possible.

We investigate the problem from this point of view, and if we find there is no sound reason for the differences in practice, we arrange to supply all four of the operating regions with the least costly grade demonstrated by experience to be satisfactory from all viewpoints. In that case, of course, we lump the purchases and obtain the added advantage of buying in still larger volume, which results frequently in still more favorable terms of purchase than previously were obtainable. Of course, matters do not always work out that way. Sometimes there are real reasons for materials of different grades being required at different points, event if at first sight the uses might seem to be identical.

As the Pennsylvania Railroad System is now organized the purchasing department and stores department are separate but, of course, cooperate closely with each other. The general duties of the stores department include regulating the volume of materials and supplies on hand, and supervising their adequate distribution throughout the various points where they are needed. The primary requisite is to keep a sufficient amount on hand but avoid over supplies at any points. An over-stock of material of any kind represents capital tied up in totally non-productive form, and in fact, in many cases in forms which are likely to deteriorate if the stocks are kept on hand too long. Hence, controlling the volume of materials and supplies is a very important element in making the most effective use of the company's working capital.

Coal Production Increased Last Year

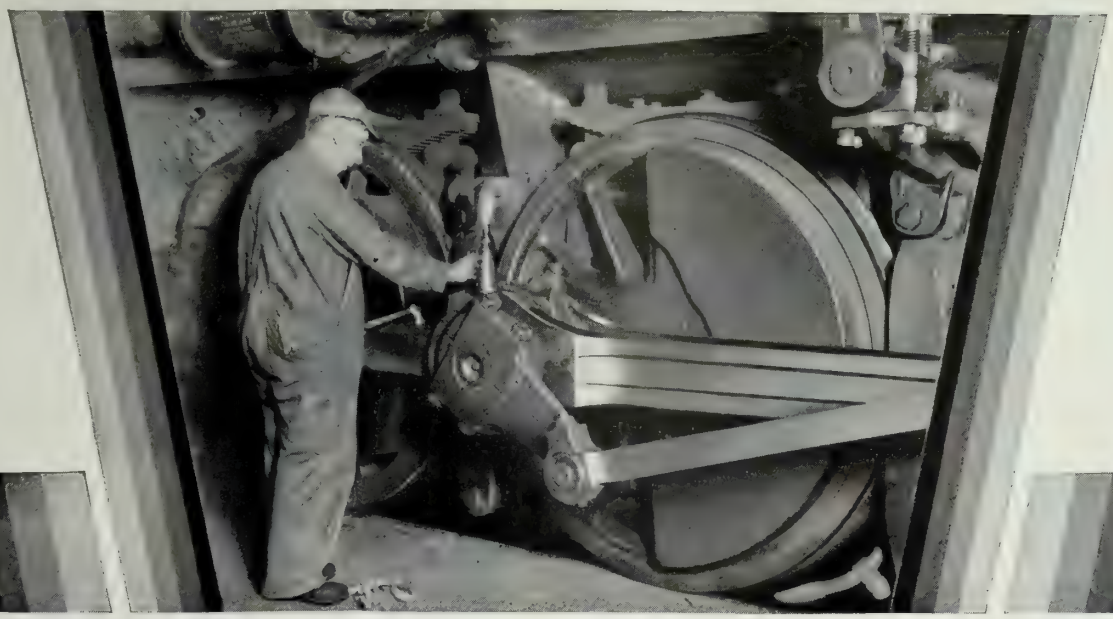
A report issued by the bureau of mines, department of commerce, shows that world production of coal of all grades in 1929 was 1,540,000,000 metric tons, representing a gain of 6.2 per cent over 1928. Of this production, 229,000,000 tons, or about 15 per cent of the total, was lignite and 1,311,000,000 tons bituminous and anthracite. In comparison with 1928 the output of lignite increased 5.5 per cent and the production of bituminous and anthracite 6.8 per cent.

The United States, as usual, was the largest producer, its total output being 552,465,000 metric tons, of which 69,526,000 tons was anthracite and 482,939,000 tons was bituminous and lignite. The second largest producing country was Germany, credited with a total output of 352,156,988 tons; of this, 163,437,056 tons was bituminous and 175,177,932 tons was lignite. Production in the Saar district from mines under French control was 13,542,000 tons.

Next in order of production was the United Kingdom (Great Britain) with 264,816,800 tons, which includes a very small production of lignite in northern Ireland.

Suburban Increase on I. C.

Since the Illinois Central system electrified its suburban lines in Chicago in 1926, the increase in passenger business on those lines has more than quadrupled. The average increase for the last two years of steam operation was 818,611 passengers a year. The average increase for the last two years of electric operation was 4,013,111 a year.



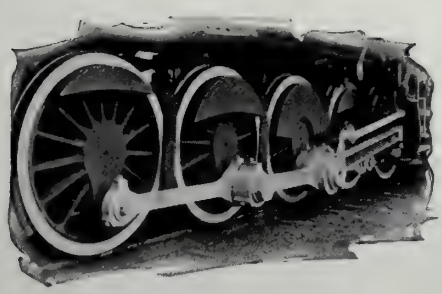
Maintenance is lower with Tandem Main Rod Drive

TWO groups of locomotives, identical except that one group has the Tandem Main Rod Drive, have been running nearly three years.

Locomotives with the Tandem Main Rod Drive are running far longer between shoppings than those not so equipped.

Instead of concentrating heavy thrusts on one set of main pins the Tandem Main Rod Drive distributes it over two axles and four pins.

This results in lower bearing pressures and reduced maintenance on all bearings.



When two driving axles are coupled up by means of the Tandem Main Rod Drive it is obvious that slipping tendencies are materially reduced, again lowering maintenance.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO
ST. LOUIS MONTREAL

What It Costs to Start and Stop

By O. O. Carr

A study showing a conservative figure of costs to stop and start trains is useful information. It enables one to make constructive suggestions where train stoppages may be avoided by improvements in operating facilities, curtailing of flag stops, and making as many as possible of the flag stops out of regular time table stops.

The cost to stop and start trains will vary according to whether the start is made on heavy grade, curve, level track, weather conditions, size locomotive, number of cars in train, price of fuel delivered on tender, etc., which would require a large number of tests to cover each condition. It is not infrequent for a freight train to meet with an unexpected stop, when the loss of 9 minutes is the direct cause of 1 to 2 hours delay farther down the line, by reason of which stop they are not able to make the meeting and passing points lined up for it, in which case these costs would be much more. A cost which covers a train movement under favorable conditions, would seem to be more representative for general requirements.

For this purpose, a series of tests and check were made on the Dynamometer car in connection with other tests being made at the time. Tests were made on approximately level straight track and under favorable weather conditions.

Additional coal arrived at by scoop count and includes both transportation and coal chute costs. Additional water costs apportioned on ratio of additional fuel costs per rate of evaporation of the locomotive.

Locomotive and car brake shoe wear based on tests made to ascertain the life of a brake shoe. Experiments have shown that brake shoe wear on the wheel itself under action of most all type shoes, to be exceedingly small, and would not materially affect these costs.

Superheat oil based on cost per minute, per average cost and consumption over a train district. It being understood that superheat oil also feeds during a short time locomotive is standing.

Cost for per diem on foreign freight cars based on $1.00 per day or the same amount if an ownership car, the net earnings of a car approximating this figure.

Stop and start 11-car passenger train Pacific type loco. level straight track, summer conditions from speed 50 miles per hour and to regain same speed.

	Distance	Time
After loco. shut off to point where stopped	.44 mile	60 seconds
	2344.0 feet	
	18.0 tel. poles	
Standing		60 seconds
Regain speed 50 m.p.h.	2 miles	240 seconds
Total		360 seconds
Less time required to run entire distance of 2.44 miles at 50 m.p.h. had stop not been made		175 seconds
Actual time lost		185 seconds
Equivalent to		3 minutes

Costs

Additional coal 296 pounds at $0.0015 per pound ($3 per ton)	$0.444
Where water cost is 7c per 1000 gallons, the water cost according to rate of evaporation superheat loco. is 3.4% of the coal costs	.015
Driver brake shoe wear locomotive $0.00055 one brake shoe per stop, 6 shoes	.0033
Brake shoe wear on 8 ownership cars, (24 shoes per car) tender 8 shoes, total 200 shoes at $0.0002 per one brake shoe stop	.04
Superheat oil $0.00078 per minute 3 minutes	.0023
Total	$0.5046

Estimate additional costs to stop and start average freight train 2-8-2 (Mikado) class superheat loco. level straight track, summer conditions, from speed of 25 mph, and to regain the same speed:

	Distance	Time
After loco. shut off to point where stopped	.375 mile	114 seconds
	1980.0 feet	
	15.0 tel. poles	
Standing		69 seconds
Regain speed 25 mph	2.6 miles	780 seconds
Total		963 seconds
Less time required to run entire distance of 2.9 miles at 25 mph. had stop not been made		417 seconds
Actual time lost		546 seconds
Equivalent to		9 minutes

Costs

Additional coal, 343 pounds, at $0.0015 per pound ($3 per ton)	$0.514
Where water cost is 7c per 1000 gallons, the water costs, according to rate of evaporation, superheat loco. is 3.4% of the coal costs	.0174
Driver brake shoe wear loco. $0.00055 one shoe per stop, 8 shoes	.0044
Brake shoe wear 50 freight cars, and tender 8 shoes each, total 408 shoes, at cost $0.00013 per shoe per stop	.053
Superheat oil $0.00033 per minute	.0029
Per diem on foreign cars, or net earning capacity, 50 ownership cars, $1 per day at $0.000694 per car minute	.312
Cost Non Overtime Train	$0.9037
In case train and engine crew are on overtime, then add 9 minutes at overtime wages $0.0889 per minute	.8001
Cost Train on Overtime	$1.7038

2-10-2 type loco. 80-car train

Time lost ..... 9 minutes

	Cost
Additional coal 550 lbs. at $0.0015 per pound	$0.825
Where water cost is 7c per 1000 gallons, the water cost according to rate of evaporation on super heat loco. is 3.4% of the coal costs	.028
Driver brake shoe wear, loco. $0.00055 one shoe per stop, 10 shoes.	.0055
Brake shoe wear, 80 freight cars and tender 8 shoes each, total, 648 shoes, at cost $0.00013 per shoe, per stop	.0842
Superheat oil $0.00051 per minute	.0045
Per diem foreign RR cars or net earnings capacity 80 ownership cars at $0.000694 per car minute	.499
Cost Non-Overtime Train	$1.4462
In case train and engine crews on overtime add 9 minutes at $0.0952 per minute	.856
Cost Train on Overtime	$2.3022

THE RALSTON STEEL CAR COMPANY

COLUMBUS, OHIO

ANNUAL CAPACITY

12,000 FREIGHT CARS

BUILDERS OF FREIGHT

TRAIN CARS SINCE 1905

50 TON GONDOLA CAR FOR THE SOUTHERN PACIFIC

The Santa Fe's New Hotel and Station at Winslow, Arizona. A Photograph From the Architect's Wash Drawing. Landscape Architects Are to Beautify the Grounds in Keeping With the Spanish Idea so Faithfully Reproduced.

A New Hotel at Winslow

SANTA FE passengers stopping for meals at Winslow, Arizona, May 15, participated in the formal opening of La Posada, the newest link in the famous chain of Fred Harvey hotels found along the Santa Fe between Chicago and the Pacific Coast. This rambling earth-tinted structure which has been rising gradually in the desert country for nearly a year, now adds to the delight of the long-distance traveler, as well as the patrons of a new motor car detour through the Petrified Forest which the Santa Fe and Fred Harvey are about to establish.

In form and style, La Posada represents one of the great ranchos of Old Mexico that in many instances for centuries have been the ancestral homes or ranchos of proud Spanish families. Like them, La Posada is the embodiment of simplicity, spacious comfort and colorful interest characteristic of Old Spanish craftsmanship. Spread over an immense area which had to be cleared of numerous other buildings, the new facilities are complete in every detail, including a new Santa Fe station of similar design, a large heating plant and an extensive system of new tracks. The new station is connected with La Posada proper by a long covered patio.

Just as the early Spanish emigrants to the Santa Fe Southwest were forced to surround their holdings, including their pasture yards, with high walls or fences as a protection against foe and weather, a wall six feet high, copied in design and workmanship from historic remains found only a few miles away, has been built around the entire "estate." This wall is pierced with loop holes for gun work, and has round corner towers for defense purposes.

The new hotel contains 70 rooms, most of them with bath. In addition there is one large suite and four small suites, each consisting of living room and bedroom. The dining room seats 120 persons, and the lunch room, which is equipped with tables and chairs, about 160. Thirty more may be seated in the lunch room annex. A large handpainted panel of Mexican tile forms the main decoration in the dining room.

The furnishings show objects of value brought from many lands, and to keep the early day illusion as veritable as possible, the more numerous and commonplace articles of daily use are "farm made." Hand-carved benches, settees, chairs, primitive copies of old Spanish chests, awkward, colossal tables supposed to have been made by Mexican peons, and other articles brought from Mexico, Spain, Africa, Italy, and even the Orient serve to recreate an atmosphere of the past.

The light fixtures vary from fine examples of antique Spanish workmanship to the iron and tin fixtures such as would have been made by the farm hands and the local blacksmith. The curtains and hangings, bedspreads and incidental decorations are such as the successive mistresses and their maid servants would have made during the long winter evenings covering many decades.

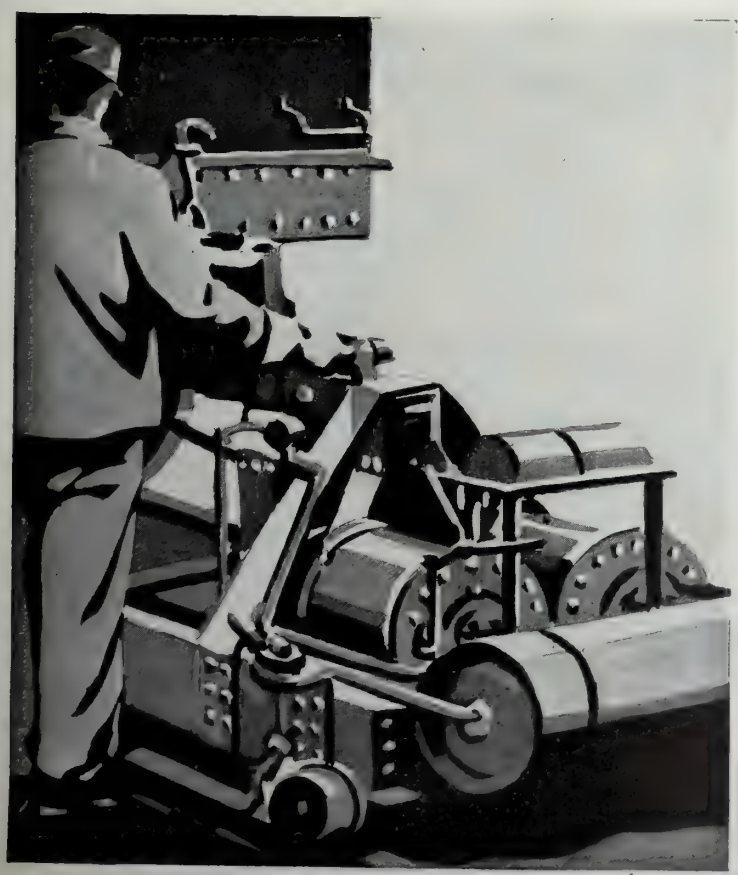
The wall decorations of the public rooms and corridors, and even the bedrooms, are in the primitive Mexican manner, painted free hand directly on the stuccoed walls. With all of this effort to create a vision of the past nowhere have modern improvements been overlooked. Guests will find themselves surrounded at every turn with all the comforts and service of the finest hotels of the country.

The Little Colorado Valley about Winslow is typical of vast areas in Old Mexico. The story of the old rancho that has been woven into the building of La Posada will be carried faithfully into the treatment of its broad domain. A landscape scheme will be developed to change the grounds into a veritable oasis, leaving the fringes to represent the untamed wilderness with its dry water hole and profusion of strange and interesting semi-desert growths.

Winslow has a comparatively warm climate with a high precentage of clear, dry days. The town centers a hundred points of interest. From the perfect all-year headquarters at La Posada it is possible to develop new Indian detours by Cadillac Harveycar to the adjacent Navajo country, the Hopi Villages, the Rainbow Bridge, the White Mountains, Grand Canyon and Santa Fe. The first new detour announced is that through the Petrified Forest with Winslow and Holbrook as contact points with the Santa Fe. Passengers on westbound train No. 9, the Navajo, will stop at La Posada for luncheon, while eastbound passengers on train No. 2, also the Navajo, will breakfast there. It is for the convenience and enjoyment of these two groups of travelers that the new detour has been arranged. Westbound passengers wishing to take the Petrified Forest detour may detrain at Holbrook after eating breakfast at Gallup. Entering Harveycars at the station they will motor for 70 miles through a famous cattle country and the grotesquely sculptured Bad Lands of the southern Painted Desert, with a 30-minute stop in the heart of the famous Petrified Forest. Arrival at Winslow will be in time for lunch at La Posada before rejoining the

FOR YEARS . . . this was the best you had

NOW You Can Bring the Testing Laboratory to the Car



WHY wait until damaged lading claims, crushed striking castings or bent coupler keys tell their story of draft gear weakness.

With the Waugh Portable Test Car, draft gears can be checked in 12 minutes as thoroughly as air brakes are tested---without removing the gear from the car. It provides a complete laboratory test of each draft gear, with a permanent chart record of its characteristics.

Write for descriptive booklet.

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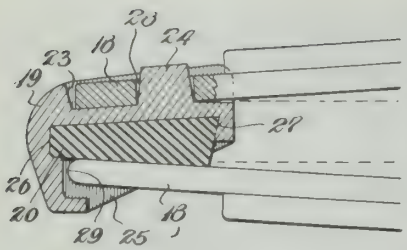


train left at Holbrook three hours previously. After breakfast at Winslow, eastbound passengers may make the detour and rejoin their train at Holbrook.

Rubberizing Truck Gear

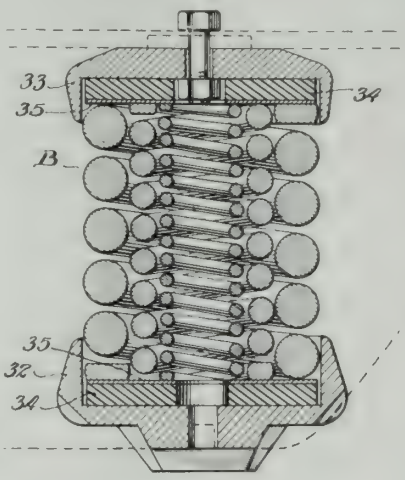
By J. J. TATUM
General Supt. Car Dept. B. & O.

No radical changes or definite improvements in trucks for railroad passengers-carrying cars have been made for several years. Mechanical engineers, and those trained in the art of building and maintaining such equipment have tried for years individually and collectively to improve the running gear or trucks of these cars to provide greater comfort and more pleasure for those making use of such equipment. The object sought by these men was to provide softer and quieter riding.

In recent years the use of steel was substituted by railroads for wood in the construction of passenger carrying cars. This change in materials made the task to accomplish these results more difficult, for the reason that the steel provided easier transmission of the metallic sounds from rails and wheels into the car, annoying the passengers more than was previously experienced.

Baltimore & Ohio officers are delighted because they have been able to find methods by which to solve the problem and provide better, smoother and more pleasant car riding. This is now done by rubberizing the running gear or trucks of the cars by inserting 102 pieces of pure rubber at various junction points of metal in the construction of the trucks. This rubber provided unusual soft, quiet, soothing and comfortable riding for passengers, such as never has been found before or enjoyed before on any other railroad in the world. The sensation is much the same as riding over wheels equipped with balloon tires. Passengers ill, or those inclined to be nervous while riding in trains will enjoy this improvement about as much as those who are well. Nervous passengers have been known to interrupt their trip by leaving the train and taking rests in hotels or with friends because they were unable to withstand the strain of long journeys caused by the rumbling sound and noise from the steel rails, wheels, and steel cars, and due to the need of softness and quietness in the riding of cars.

These discomforts and annoying conditions now have been eliminated from Baltimore & Ohio passenger-carrying equipment. Special appro-



priation was provided by this company for the application of these rubber pads to all its passenger-carrying cars, and special arrangements have been made for changing the equipment so that it will be done promptly, and the improvement had on all cars at an early date. More than 150 cars already have been equipped, and others are being equipped daily.

Rubber cushion pads have been placed at the ends of each elliptic spring, and on top and at the bottom of each equalizer spring; on top of each journal box under each equalizer foot; on top of the truck center bearing bolster under the center plates, and also under the bearing of the center truck bolster on top of the cross bolster. The rubber cushion pads under the ends of the elliptic springs made it possible for the springs to be arranged so that the main plate would be approximately straight throughout its length, insuring the absorption of the least shock or jolt in the truck and preventing it from being transmitted to the car, where it would annoy or interrupt the comfort of the passengers.

The rubber cushion pads placed on the journal box and equalizer springs iron out the usual sound or interrupted smoothness of switches, frogs, crossings and joints of the rail which have interrupted the comfort of passengers. With the rubberized trucks passengers can converse with a great deal more satisfaction and comfort while riding because of the elimination of the noises and metallic sounds heretofore experienced.

Cut No. 1 shows the equalizer spring and rubber cushion pads used on both top and bottom of the coil spring, and are numbered 34.

Cut No. 2 shows the elliptic spring with the rubber cushion pads at its ends, and are numbered 20.

I believe there is nothing among mankind swifter than rumor.—*Plautus.*

The Pullman Company, considered as a hotel, entertained 35 million guests last year and these guests traveled a total of 13,600,000,000 miles. There is an average of more than 100,000 persons on Pullman cars every day of the year.

Viaduct Near Trout Hall on the Frankfield Line, Jamaica Government Railway.

GRAHAM-WHITE SANDERS

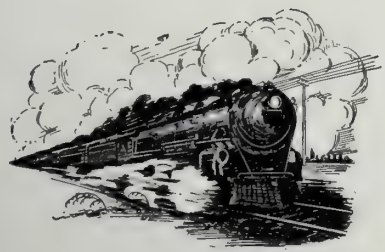
ARE YOUR RAINY-DAY SURETY AGAINST POWER LOSSES

GRAHAM-WHITE SANDERS

ARE SELF-CLEANING AND PROOF AGAINST
CLOGGING AND SAND BLASTING

GRAHAM-WHITE SANDERS

RETURN THEIR FIRST COST IN ECONOMY
OF SAND, LABOR, AND SANDER
REPAIR PARTS



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Naturally, This Isn't the Hush, Hush of England. We Printed a Picture of That One in February. This is the George Washington. One of the Baltimore & Ohio's Fine Passenger Locomotives.

The "Hush Hush" Locomotive

By CHARLES ELLIOTT
London

MUCH MYSTERY invariably is associated with the production of any railroad locomotive that embodies features previously untried. Probably no locomotive ever built has had its birth amid such an atmosphere of mystery and secrecy as the new high pressure "Baltic" machine, No. 10,000, recently put into traffic on the London & North Eastern Railway of England. The engine was described briefly in these columns last month.

To H. N. Gresley, chief mechanical engineer of the London & North Eastern road, Britain's second largest railroad consolidation, goes credit for the design of this mysterious engine. The 10,000 was built in the Darlington shops of the road, not very far from the spot where George Stephenson pieced together his famous "Locomotion No. 1" more than a century ago. Britain's latest giant of the road would give the "Father of Railways" a strange turn if he could see it speeding away on the rebuilt Stockton & Darlington system of today.

To get down to brass tacks, the 10,000 is a "Baltic" type high pressure locomotive with a water tube boiler, the latter being manufactured by the Glasgow establishment of Yarrow & Company, Limited. The boiler is built to the extreme limits of the railroad gauge, so that there is no room for a chimney projecting above it. The chimney, therefore, has been sunk within casing plates, so arranged as to throw the smoke upward and give the engineer a clear view of the track ahead.

Maximum economy in fuel consumption is obtained by having a working boiler pressure of 450 pounds to the square inch, the highest pressure ever employed in Britain, where the normal boiler pressures run from 200 to 250 pounds. The boiler consists of five steam drums forged solid and machined all over.

Special designs of safety valves, relief valves, reducing valves and regulators are employed, and the air supplied to the ashpan for combustion purposes is pre-heated by passing through an air space between the flues and the outer casing of the boiler.

The engine is a four cylinder compound. Two high pressure cast steel cylinders, each 12 in. diameter by 26 in. stroke, drive on the front coupled axle. The two low pressure cylinders are placed outside the frames, and are of 20 in. diameter by 26 in. stroke. Two sets of valve gears operate the four valves. To the outside cylinders Walschaerts gear is fitted, and the valves of the high pressure inside cylinders are operated by a rocking shaft so arranged that the cut-off of the high pressure cylinders may be varied independently of that of the low pressure cylinders. The steam valves operating the reversing gear are fitted with telemotor control as are also the cylinder cocks. The 10,000 possesses the 4-6-4 "Baltic" wheel arrangement, and is the first tender locomotive with this wheel arrangement to be built in Britain. The six coupled driving wheels have a diameter of 6 ft. 8 in., and the trailing end of the locomotive is carried on two axles.

In full working order the new locomotive turns the scale at 103½ tons, and the tender weighs 62½ tons, giving a total weight of 166 tons. The total wheelbase is 40 feet, and total length with tender 75 ft. 3 in. Extreme width is exactly nine feet, and extreme height 12 ft. 11 in.

The No. 10,000 employs an eight-wheeled tender of the familiar "Flying Scotsman" corridor type, as described n these pages some months ago. The tender carries nine tons of coal and 5,000 gallons of water, and is equipped with pick-up apparatus for the supply of water from track troughs during non-stop runs.

On the London-Edinburgh nonstop trip of the "Flying Scotsman", which is the kind of service the new "Hush Hush" locomotive is destined to enter, the 393 miles between London (King's Cross station) and Edinburgh (Waverley) are covered in just 8¼ hours. With the new locomotive at the head of the train, the run probably will be accomplished with ease in something like six hours.

For the moment there is no intention to speed up the London-Edinburgh run to this extent, but the putting into traffic of this latest locomotive giant opens up quite new speed possibilities, and the extensive trials at present being conducted with this quaint machine will be followed with the closest interest on both sides of the Atlantic.

World's Largest Railroad

The largest railroad in the world is the German Federal Railroad, says the Wall Street Journal. It is a combination of several systems owned and operated by the various states, under which the new constitution becomes property of the German Republic. It has a capitalization of 25 billion gold marks or more than six billion dollars. Thus far no dividends have been paid but the system's contributions to reparations payments are approximately $250,000,000 annually.

More than twice the number of passengers per year are carried by the German Federal Railroad than all the first class American railroads combined. Since 1919, they have reduced the number of employes from 1,100,000 to 700,000 while United States roads have shown a decrease of about 175,000 employes.

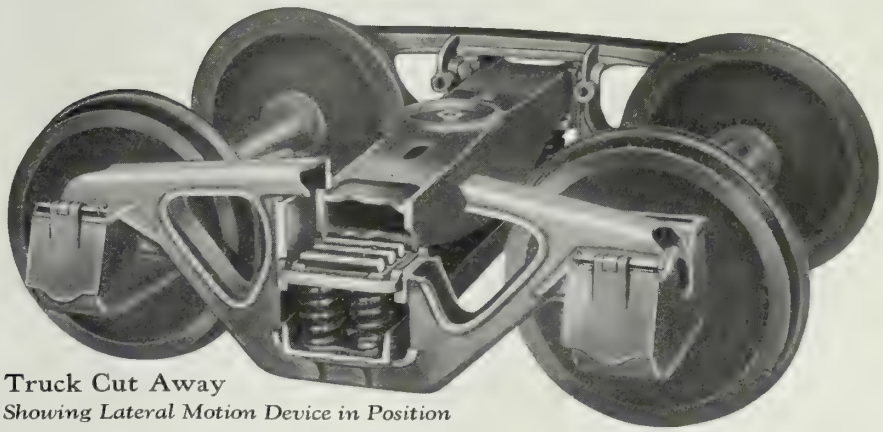
STANDARD CAR TRUCK CO.

1322 McCORMICK BLDG., CHICAGO

The BARBER Lateral Motion Device

Is less expensive than swing hangers and has no dangerous wearing parts. Under fair usage it will last the life of the car.

1,100,000 cars equipped and in service.



Truck Cut Away

Showing Lateral Motion Device in Position

The Barber Lateral Motion Device is the only simple and practical substitute for "swing hangers."

All passenger car trucks are equipped with lateral motion through some type of swing hanger. At one time swing hangers were extensively used on freight car trucks, but were discontinued because excessive wear soon put them in a dangerous condition. A defective hanger in a moving truck nearly always resulted in a serious wreck.

The Barber Lateral Motion Device eliminates the danger element and the consequent dissatisfaction. It provides the means of giving freight car trucks the same easy riding quality so much desired in passenger equipment, and as a result decreases wear and tear on rolling stock, delays, accidents and actual money losses which usually follow in the wake of wrecks and tie-ups.

The difference between the cost of a rigid truck and one equipped with the Barber Lateral Motion Device is so small, that the resultant saving in continuous car service will pay for the device in a short time.

Decreases Wheel Flange Wear, Rail Wear and Train Resistance

—

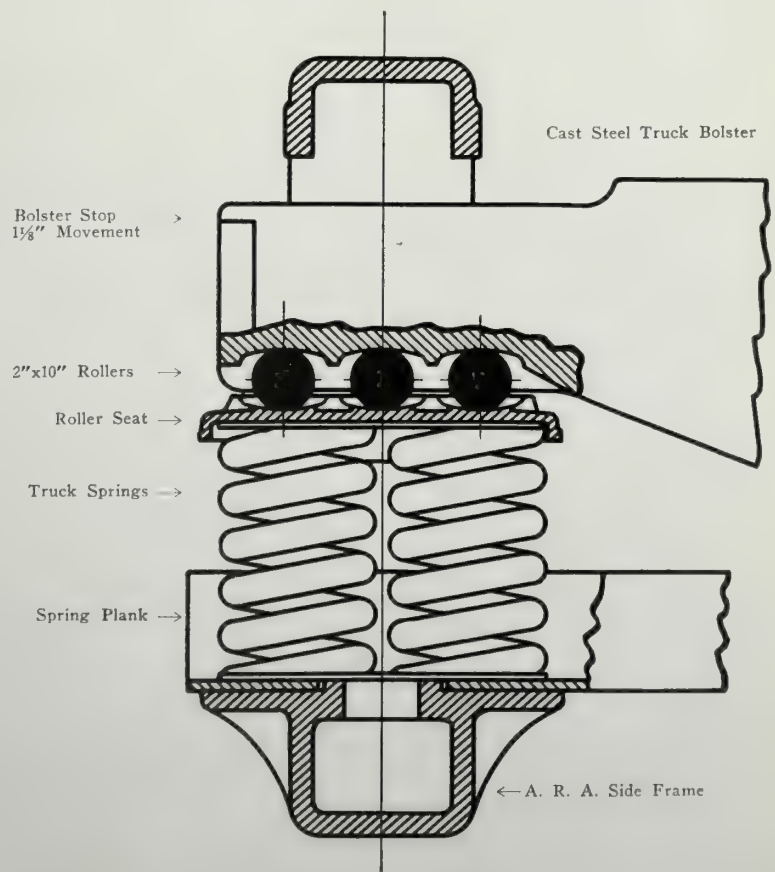
Lessens Causes of Derailments

—

Saves wear on Coupler Knuckles and Journal Brasses, all of which reduces freight damage claims.

—

Can be applied
to
American Steel Foundry
Bettendorf
Buckeye
Gould Coupler Co.
and
Scullen
Side Frames
and Bolsters.



The Locomotive Faces Tell Tales

An Artist's Conception

By

Otto Kuhler

Fig. C Shows How I Would Design a Stack, If It Were My Business. The Upturned Cone Makes the Engine Just a Little More Brute-like and Short-necked, and Just a Little Bit More Powerful.

I HAVE seen many types of locomotives. I liked some of them, others I did not. It just depended on their faces. Like humans, they all have decided features, which are largely dependent on the types of the smokestacks and their positions.

Smokestacks, long and slender, remind me of a woman with a beautiful neck. This type is more or less gone now, except in Europe, where you'll find them on little branch lines. Figure A represents one of these types. It was a German express engine in the '80's, and while even a tiny little thing, she could run with her high drivers. But she could not pull.

Fig. A. Smokestacks, Long and Slender, Remind Me of a Woman With a Beautiful Neck. A German Express Engine in the 80's. Tiny Thing. She Could Run With Her High Drivers, But She Could Not Pull.

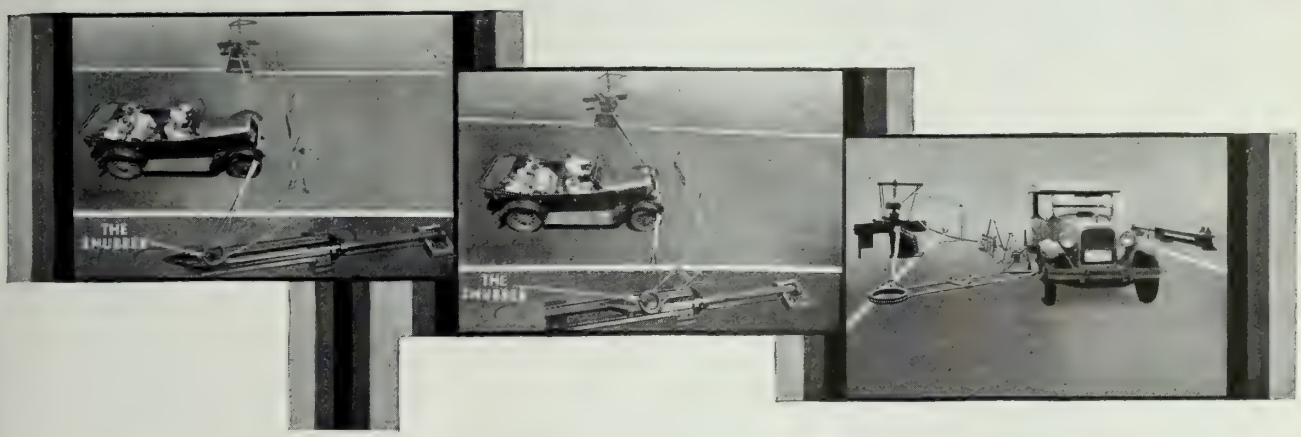
Just walk down a street and note this: you look and size up the passers-by. Their facial expressions will be determined largely by the positions of their eyes and nose. Forget about the anatomical body structure for a while.

When I was a lad, I was sent to Belgium. The first thing I did was to compare locomotives. By their locomotives you could see whether that country in Europe meant business or was just playing with railroads, just trying to be different, or use locomotives as advertisements.

All right! In Belgium, there were the old timers, fancy ones. Look at Figure B on the next page. This long-legged engine was imported from England in the idea, but since it was a Belgian engine, it *had* to be different. Square smokestack, huge, highly polished brass dome, brass stripes around the boiler, and, eventually, a little cab for the engineer. There was a good engine all dressed up trying to be individual. It certainly was that. But Belgium was a little country, and that engine needed a lot of start to "hop off the ground."

CONSIDER THESE FACTS

BEFORE CHOOSING GRADE CROSSING PROTECTORS



The fundamental idea from which THE HIGHWAY GUARDIAN has been developed was the ingenious conception of Mr. Joseph B. Strauss, eminent consulting engineer and builder of many of the world's famous bridges.

ONE of the greatest problems facing the railroads today is grade crossing protection. Trains are faster, crossings more numerous and motor vehicles travel at speeds unthought of a few years ago.

To combat these conditions, THE HIGHWAY GUARDIAN offers more advantages than any other type of crossing protection.

It is a positive, automatically operated BARRIER.

Without damage to vehicles or injury to occupants motorists are forcibly STOPPED.

Installation does not change TRACKS or HIGHWAY.

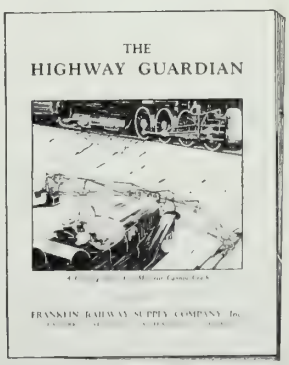
Operation is as RELIABLE as a signal system.

Without delay, set-up can be made, affording PROTECTION AT ONCE.

By preventing accidents, LIVES ARE SAVED, wrecks prevented, damage claims eliminated.

Dozens of crossings can be MADE SAFE for the cost of a few grade separations.

THE HIGHWAY GUARDIAN offers a means of protecting crossings that is as modern as the best cars on the highway or the fast expresses on the tracks. Consider the advantages it will give, the actual money it will save, when the important subject of crossing protection comes up for discussion.



Bulletin No. 750 tells the interesting story of THE HIGHWAY GUARDIAN'S operation. Write for a copy.

FRANKLIN RAILWAY SUPPLY CO., Inc.

New York Chicago St. Louis San Francisco Montreal

THE HIGHWAY GUARDIAN

THE CROSSING GATE THE MOTORIST CANNOT CRASH

Fig. B. This Long-Legged Engine Was Imported From England in the Idea, But Since It Was a Belgian Engine, It Had to be Different.

Therefore, an enormous sandbox was provided to get the train going. The poor thing always had too much load behind her, and she skidded all the time, and when finally she had the train going, it was time to put the brakes on. She looked a freak, and she was a freak, born of the desire to be different in construction, if not in aspect.

I got an awful shock once when I saw a passenger train engine pulling a sacred express train. I figured it would be two hours late, but it was not. Then I realized that the days of the high drivers were gone. High drivers had always been the sacred symbol of express engines.

About the time I was nine years old, in Germany, I sent a postcard to the Baldwin Locomotive Works, asking for the company's catalogue. I received it and got a great kick out of it. It contained about all the types of the world combined. They might have been pretty well standardized, but they had to put brass ribbons around a Chinese or Manchuria Mogul to make it a locomotive for China. This serious looking engine, when so dressed up, looked like a bar dame.

So, to be honest, when I hit New York seven years ago, I was laying for a big stub-nosed brute of an engine with a real cow-catcher in front (such as I had seen in the movies), and after I left Manhattan and the characterless electric engines, I was laying for big stakes. I was badly disappointed. There came a short-set brute along, beautiful to the end, except the stack, and that's what counts. That stack was just as short as any other stack, but there was a curly rim around it at the top. It opened up in a way that looked playful. The exhaust would go out and turn over the rim a few funny little clouds—clouds that did not go up straight. They just lingered and waited. Just like a beautiful woman who says something and does not mean it, as if there was an afterthought coming. That little curl around the stack, that little feminine expression was just plainly disgusting.

Two days later, I was standing on top of a hill in Pittsburgh. Looking down, there were two brutes pulling a long snake of cars up the grade. That exhaust went like the fire of a gun. I ran down the hill, laid for them. They came slowly, puffing seriously. They meant it, and blasted away. Their stacks were straight, just a little rim, and the stacks were stubby, short; no skidding, just real honest pull.

They came closer. One big, white eye looked at me. The man who drove it could at least see where he was going and do his job. (In Europe the lights were more decorative and for warning, rather than to light the track.) Higher pitched went the roar. They were pulling hard. They came closer, and they puffed. There was a little rim above the boiler, four bolts holding it, giving it a setting. They blazed away, and I checked nuts and bolts, but I always looked at that smokestack. Narrow-lipped, it said what it said, and meant it—no curls around the mouth, just plain talking, and it meant business.

That is a locomotive face. I shall not forget—and after I have been drawing hundreds of locomotives, there's the Baltimore & Ohio short-stacked types. That engine—no, that stack, means business.

There's another drawing, Fig. C, back on the other page near the headline. It shows how I would design a stack, if it were my business. The upturned cone makes the engine just a little more brute-like and short-necked, and just a little bit more powerful.

Of course, I could keep on writing and drawing about this subject to the limit. It's just my wish to give a little idea of how different engines look with different types of stacks. And that does not apply to engines alone. It's the same thing with ships, houses, factories. The design of the stack very often describes the character of the owner.

Writing about Otto Kuhler, in "The Blast Furnace and Steel Plant," about a year ago, Charles Longenecker said, "To appreciate fully and correctly to conceive the romance embodied in steel, calls for more than the eye of an artist; there must be a closer acquaintanceship. The man who paints steel should be something of an engineer, and know the anatomy of machines. Such a man is O. Kuhler. He was born in 1894, in a home back among the hills bordering the Rhine. His family had been, for several generations, makers of iron, so that he was reared in an atmosphere which created lasting impressions which had a decided influence on his choice of a profession. He received an education in the technical schools, but although he found engineering of interest, he found greater enthusiasm in drawing and painting the equipment with which he worked. He served as a mechanic, as a designer of automobile bodies, as an advertising manager and, in 1918, as a railroad construction engineer, and for a while as a sailor in the merchant marine.

"Coming to America in 1923, he settled in Pittsburgh, where he believed he would find the greatest opportunity to practice his profession. He remained there until 1929, when he established offices and a studio in New York City. Recently he moved to Scarsdale, N. Y., where he resides and has his studio and office."

A visit to Kuhler's studio by the editor of the Baltimore & Ohio Employes' Magazine resulted in the writing of the article by the artist. It is reproduced here, with some of the sketches, through the courtesy of that magazine.

IMPROVED HIPOWER

AN IDEAL SHOCK ABSORBER

IT has been conclusively demonstrated that bolts subjected repeatedly to heavy stresses are ultimately weakened. Even though these stresses are below the elastic limit, the repetition of the strain is harmful.

Improved Hipowers will absorb the impacts on bolts—they will save the expense of battered threads and mutilated rail ends. They are the ideal shock absorbers.

Ask your experienced trackmen, they *know.*

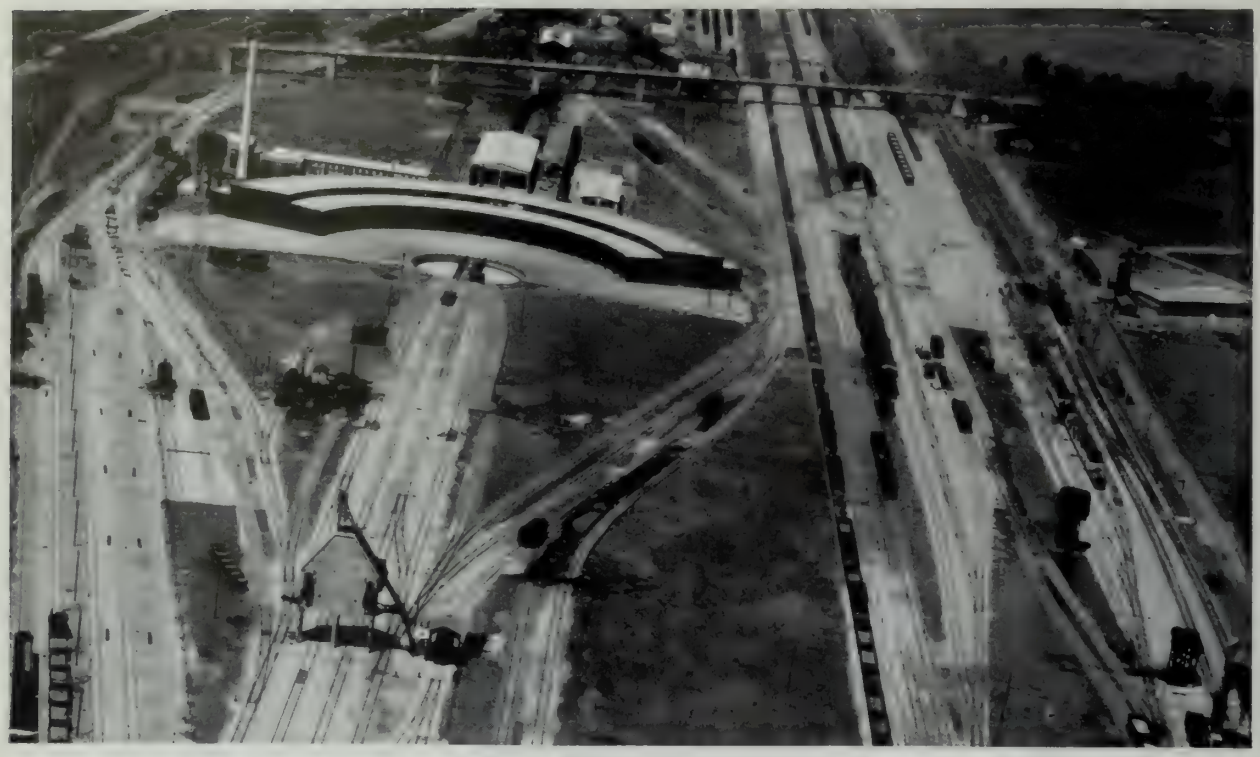
THE NATIONAL LOCK WASHER COMPANY

Newark, New Jersey, U. S. A.

The High Bolt Tension Spring Washer

Rust-resisting • Commercially non-flattenable

Ultimately costs less



The Frisco's Yards and Engine Terminal at Yale, Tenn.

The News of the Month

What's Been Going on in Transportation, Railroads, Automotive, Supply, Aviation

DURING THE first quarter of 1930 the railroads of the United States made capital expenditures for new equipment and additions and betterments totaling $223,772,000, the Bureau of Railway Economics reported May 16. This was an increase of $96,653,000 over the same period of 1929 and a gain of $95,344,000 over the corresponding quarter of 1928.

Expenditures during the first three months of the current year for purchase of new equipment were $89,070,000, compared with $37,642,000 for the same months of 1929.

Roadway and structures expenditures aggregated $134,702,000, against $89,477,000 in the same period of last year.

The total railroad capital expenditures program authorized to April 1, 1930, amounted to $973,578,000, as compared with $704,960,000 authorized to April 1, 1929.

Expenditures during the first quarter of 1930 of $223,772,000 exceeded the estimate of $212,000,000 made at the November meeting of railroad executives by $11,772,000.

Cars Ready for Crops

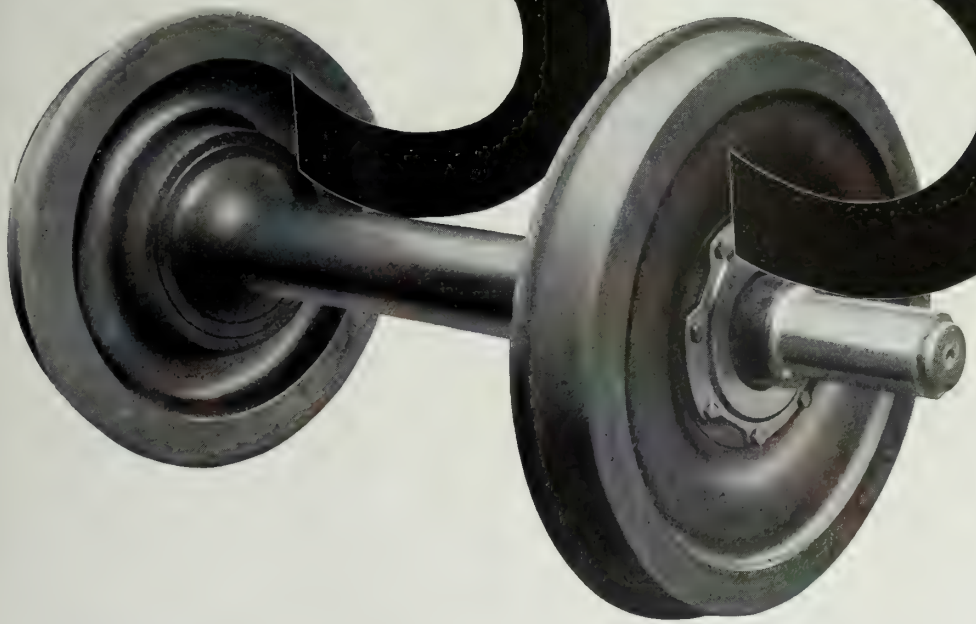
Plans for handling the seasonal crop movement, which will begin in about a month, were discussed in a report submitted by M. J. Gormley, chairman of the car service division of the A.R.A., at the regular spring meeting of the association, held May 15 at the Stevens Hotel, Chicago.

With equipment in the best physical condition it has been in recent years, the railroads will have an adequate supply of box cars to protect the seasonal crop movement, providing there is no abnormal delay at loading or unloading points. As has been customary in previous years, empty cars adapted to the loading of grain, are being returned as rapidly as possible to their home roads in the grain raising states so they will be available as soon as the crop movement begins.

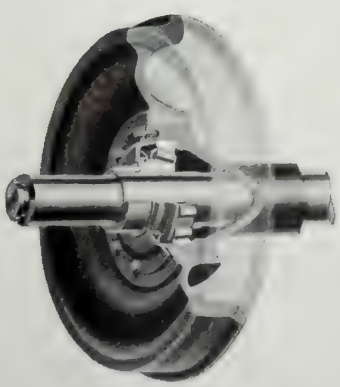
"Preliminary forecast of winter wheat production in 1930," said the report, "indicates a crop five per cent less than the last two years, and about equal to the five-year average, 1924-1928. Growing conditions the past 60 days in the areas of principal production have been relatively unfavorable. Spring wheat acreage is expected to be slightly less than last year, with generally favorable weather conditions to date. Naturally, at this season, it is impossible to gauge with any accuracy the volume of wheat the railroads will be called upon to move, but it is not safe to anticipate much less than an average crop.

"It is the opinion of the car service division that the wheat loading railroads will be prepared this season with a supply of grain box cars adequate for a heavy movement, but that in the event terminal grain storage conditions do not improve, they must be ready to take prompt measures, if and when necessary, to prevent serious congestion of grain traffic at markets or ports.

DEAD LOADS 33 TONS PER AXLE



ROLLER BEARINGS mounted within the wheel hubs are operating successfully where the dead axle loads are as high as 33 tons to the axle. High speed passenger service with loads only slightly lower also demonstrate the worth of this roller bearing application.



Successful operation under these conditions, the simplicity of this rugged Unit, its ease of application to every existing equipment, acclaim the American Steel Foundries Roller Bearing Unit as the logical way of applying roller bearings to rolling stock.

While Timken Bearings are shown, Shafer Bearings are also used.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

R. H. Aishton, president of A.R.A., presided at the meeting, which was attended by prominent railroad executives from all parts of the country.

Associated Traffic Clubs Meet

The eighth yearly meeting of the Associated Traffic Clubs of America was held in late April at Cincinnati. More than 500 persons attended. The program, a notable one, included such speakers as E. I. Lewis of the Interstate Commerce Commission and W. R. Cole, president of the Louisville & Nashville. Commissioner Lewis, who dealt with the historical and administrative aspects of valuation, was introduced by Henry A. Palmer, editor of the Traffic World, who, Commissioner Lewis explained, was once his boss in a newspaper office. President Cole was introduced by J. M. Fitzgerald, assistant to the chairman of the public relations committee of the eastern railroads.

At the yearly dinner in the Hotel Gibson, attended by 1000 persons, General W. W. Atterbury, president of the Pennsylvania Railroad, and C. W. Galloway, vice president of the Baltimore & Ohio, spoke. Atlanta was chosen for the next meeting in October.

I.C.C. to Investigate Motor Buses

An exhaustive investigation into the general matter of coordination of motor transportation of passengers and property on the public highways by or in connection or in competition with the railroads, has been entered upon by the Interstate Commerce Commission, it was announced by order May 15. The purpose of such general inquiry into the activities of the nation's bus and truck services is to acquaint the commission with the entire motor transportation situation with a view to making recommendations to congress as to additional legislation relating to this section of the transportation field.

Lackawanna's New Terminal Warehouse

The new terminal warehouse and freight station of the Lackawanna Railroad in North Jersey City, said to be the third largest building in New Jersey and the largest under one roof devoted exclusively to general storage and distribution purposes on the Atlantic Seaboard, was placed in service May 1. Adjacent to the freight yards, Hoboken Passenger Terminal, steamship piers, ferries to New York, vehicular tunnel, and express motor highway through New Jersey, it is within easy trucking distance to all points in the metropolitant area.

Built of steel, concrete, brick and glass, its capacity is 90,000 tons or 4,000 freight car loads. The floor-carrying capacity ranges from 250 to 350 pounds per square foot. Both sides are served by viaducts at second-floor level, ample platforms and tail-board space are provided at street level and driveways accommodating three lanes of traffic extend through the building the long way. The equipment includes 27 electric elevators, a battery of platform scales, electric-lift trucks and live skids.

Sections are set aside for light manufacturing, office and display space, assembly work, and the special handling of chemicals, automobiles or what have you. Another section accommodates bonded freight. A distribution service will be maintained as an auxiliary to the warehouse, assuring delivery at practically all points within a radius of 50 miles the following day. A United States customs storekeeper, the manager of Lackawanna Warehouses, Inc., and the local freight agent will have offices in the building.

This project was planned and carried out by the engineering staff of the Lackawanna, the actual construction work being done by the Turner Construction Co.

Revenue Loadings Down

Loading of revenue freight for the week ended May 10 totaled 933,931 cars as reported by the car service division of the American Railway Association. This was a decrease of 8,968 cars under the preceding week and a reduction of 115,029 cars below the same week in 1929. It also was a reduction of 68,480 cars under the same week in 1928.

Miscellaneous freight loading for the week of May 10 totaled 367,923 cars, 43,999 cars under the same week in 1929 and 28,718 cars under the corresponding week in 1928. Loading of merchandise less than carload lot freight amounted to 249,244 cars, a decrease of 15,036 cars below the corresponding week last year and 11,954 cars below the same week two years ago.

Grain and grain products loading for the week totaled 37,466 cars, an increase of 583 cars above the same week in 1929 but 4,657 cars below the week in 1928. In the western districts alone, grain and grain products loading amounted to 24,352, an increase of 239 cars over the same week in 1929.

Live stock loading totaled 24,278 cars, 2,024 cars under the same week in 1929 and 2,786 cars under the same week in 1928. In the western districts alone, live stock loading amounted to 19,487 cars, a decrease of 1,725 cars compared with the same week last year.

All districts reported reductions in the total loading of all commodities compared not only with the same week in 1929, but also with the same period in 1928.

Big Terminal Project for Buffalo

Plans for a $50,000,000 produce terminal and farmers' market, to be built at Buffalo by the Produce Exchange and the Nickel Plate Railroad, are under way. These plans provide for 50 stores for produce dealers; a 15-acre market for farmers; a cold storage plant; a garage and warehouse for grocers and packers, and a bank. An enclosed winter market is also planned. The market will have adjoining it a delivery yard open to all railroads, with capacity of 350 cars and storage facilities for an additional 800 cars.

Western Railway Club Elects Officers

L. R. Wink, assistant superintendent of the car department, C. & N. W., was elected president of the Western Railway Club, Chicago, in the yearly meeting at the Hotel Sherman, May 5. Other officers elected are, first vice president, C. T. Ripley, chief mechanical engineer, Santa Fe System; second vice president, O. E. Ward, superintendent of motive power, C. B. & Q., Chicago; treasurer, J. W. Fogg, McLean-Fogg Lock Nut Co., Chicago, reelected; secretary, W. J. Dickinson.

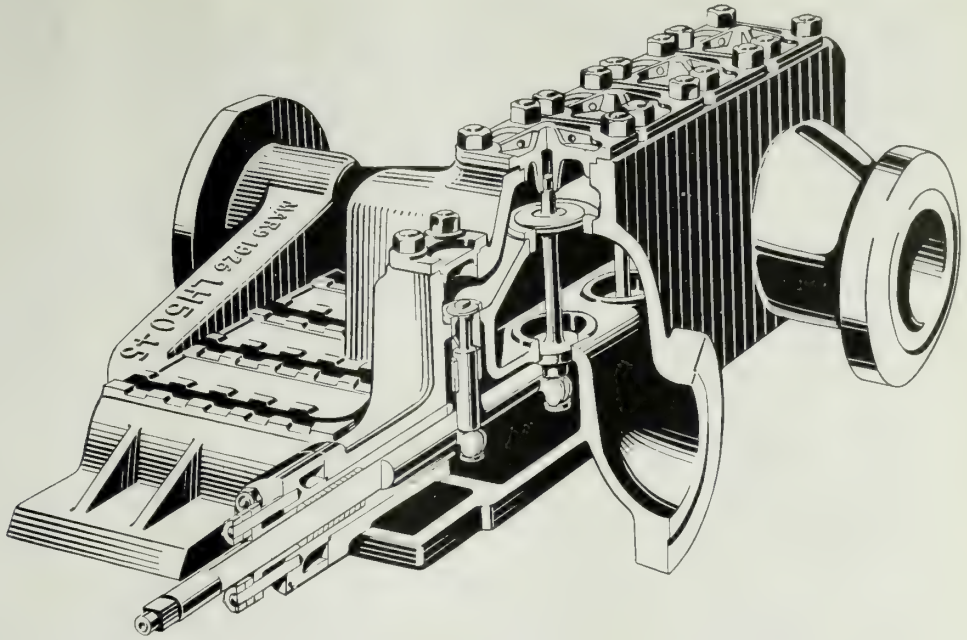
The principal address was by the Rev. Dr. George Craig Stewart, rector of St. Luke's Episcopal Church, Evanston, who discussed "Machinery and Men."

But When Does Work Begin?

Decisions announced May 27 by the California supreme court and the state railroad commission make mandatory the construction of a union station at Los Angeles, in accordance with an order to that effect issued by the railroad commission July 8, 1927. In the actions of May 27 the state commission denied the railroads' petition for a rehearing of the order for construction. At almost the same time, the supreme court, sitting en banc, wiped out that avenue of further appeal by handing down a unanimous decision legalizing the railroad commission's authority to force construction. The decision has the effect of eliminating that which has come to be known, in the long litigation, as the "blind spot," in other words, the public utilities body with the properly constituted authority to tell carriers, how and when they shall best serve the public interest.

Improved Motor Car Belts

Since early 1925 endless cord belt has been the standard transmission on several cars made by Fairmont Railway Motors, Inc., of Fairmont, Minn. The construction and manufacture of these belts has been steadily improved wherever experience showed room for betterment. However, the basic design proved to be a revolutionary advance over the



Improves Locomotive Operation

Smoothness of operation, increased acceleration, and better locomotive control result from application of the American multiple throttle.

Employing a series of small valves opening consecutively the American multiple throttle provides graduated control of steam to the cylinders which insures ease and smoothness in starting. In addition this fineness of control, avoids slipping drivers and increases the acceleration in starting.

Built into the superheater header, it is adjacent to the cylinders. When the throttle is opened in starting there is no momentary lag for the superheater units to fill with steam. When the throttle is closed the steam supply to the cylinders is instantly stopped. No allowance need be made for the steam in the superheater units. Stops can be made accurately with a noticeable reduction of wear and tear on brake shoes and tires.

On any locomotive the American multiple throttle enables quicker, smoother train operation.

AMERICAN THROTTLE COMPANY, Inc.

60 East 42nd Street
NEW YORK

Peoples Gas Building
CHICAGO

Canadian Representatives: The Superheater Company, Limited, Montreal

The Belts Shown Here Are Not Worn Out. They Have Been in Continuous Service, Too, for Three Years and Eight Months.

old style laced belt which was subject to road failure from torn-out lacing. The most recent improvement consists of placing two plies of rubberized fabric full width on the side of the belt coming in contact with the engine and axle pulleys, thus doubling the previous resistance to wear and giving greater protection to the endless cord core which carries the load. This core is formed from one continuous cord wrapped lengthwise of the belt, like rope on a hoist drum, and solidly embedded in rubber. Durability of the old single ply cover is shown in the accompanying photograph of six M19 Inspection car belts exhibited by Fairmont at the National Railway Appliances Show in Chicago, March 10 to 13, 1930. These belts are not yet worn out. Each has run an average of 35,333 miles in three years and eight months, on the railroads indicated by the symbols.

Couzens Resolution by the Senate

By a vote of 46 to 27 the senate adopted the Couzens resolution May 21, suspending the authority of the Interstate Commerce Commission under existing law to authorize any railroad consolidations or acquisition of control until March 4, 1931, except in conformity with certain requirements. An amendment to the resolution, submitted by Senator Connally (Dem.), of Texas, was incorporated in the bill, providing that the commission approve no consolidation which does not require continuation of shops and offices on all lines affected, or provide adequate compensation for any damages to employes arising from the abandonment of such shops or offices.

The resolution sets up as requirements precedent to approval by the commission, that the commission shall prescribe in its order authorizing the consolidation such terms as may be found necessary to prevent dismissal, demotion or lay-off of employes; that existing through routes and channels of trade must be maintained, and that the applicant must make a bidding offer for the acquisition of other lines allocated to it by the general consolidation scheme of the commission; and third, that the commission shall not approve any consolidation that would be in violation of any anti-trust law, except for such approval.

Swedish Railways' Big Order

The Swedish State Railways have recently ordered S.K.F. anti-friction journal bearings for 18,000 ore cars. The boxes are to withstand a load of 7.5 tons at a maximum speed of 60 kilometers an hour and are expected to make an annual mileage of 40,000 to 50,000 kilometers. It is believed that this is the largest single order received for anti-friction journal bearings from any railroad in the country.

The Standard Type B-T Stoker

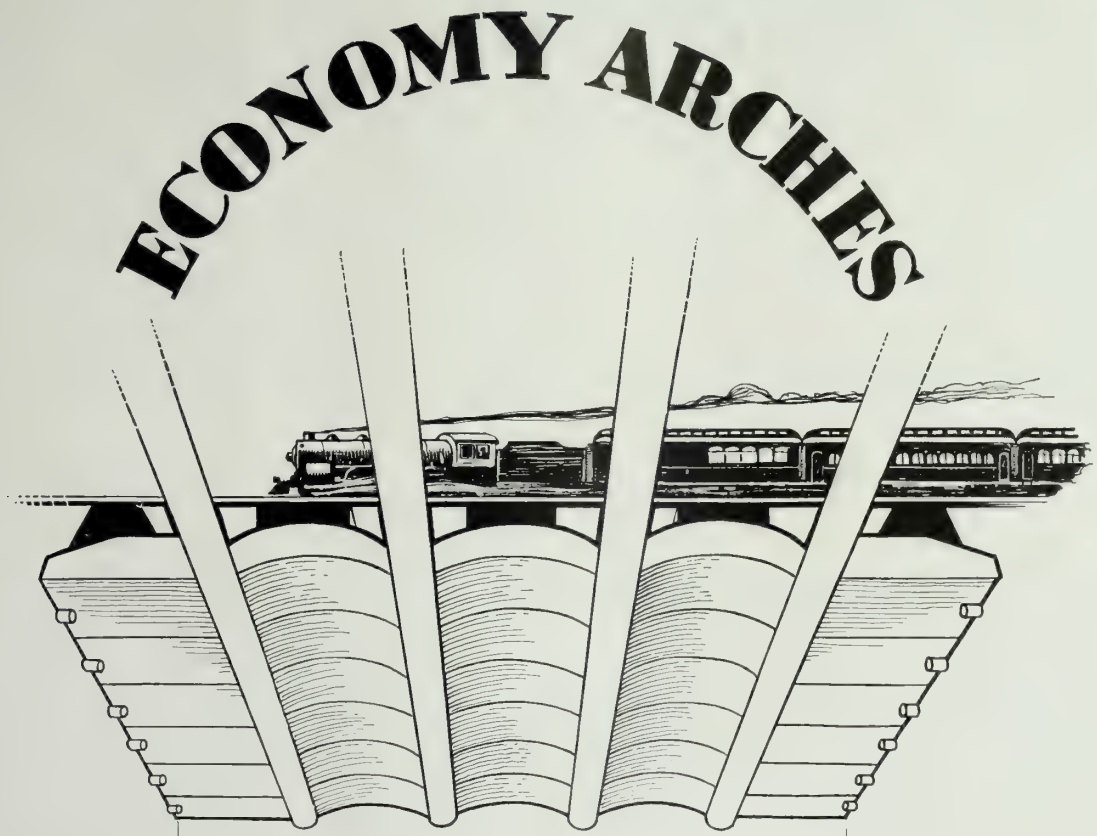
The Standard Type B-T Stoker, the most recent stoker development, is applicable to either new or old power, but it is particularly designed for application where cab intrusion may be disregarded and it is desired to use lump coal and deliver it to the firebox without any appreciable reduction in size. This stoker is somewhat similar to the Standard Type B-K Stoker in that it comprises a rigid trough on the tender, a rigid discharge box delivering the fuel to the firing opening of the locomotive firebox, and an intermediate housing section telescopically extensible and universally connected at its ends to the trough and the discharge box to permit articulation between the locomotive and tender. In the Type B-T Stoker these parts have been modified and embody a novel distributing system, a special slide gate crusher arrangement, and a two section conveyor screw that conveys lump coal from the tender to the firebox with little degradation of the lumps. The coal from the tender falls by gravity into the tender trough. The flow of coal to this trough is controlled by the usual form of sliding plates. A rugged cast steel screw conveyor moves the coal forward past a crusher which acts to reduce the size of any lumps too large for efficient firing to a predetermined size suitable for delivery to the firebox. An adjustable slide gate in the crusher zone, manually adjusted, controls the maximum size lump coal to be fired. This stoker, like the Standard Type B-K Stoker, has fewer moving parts, and adds minimum weight on the locomotive.

The Standard Type B-T Stoker conveys lump coal producing fewer of the smaller sizes than any stoker now in use, and was developed to meet a request for a stoker having these characteristics.

J. M. Acquires Stevens Patents

The Johns-Manville Corporation announces the purchase of the assets and patents of the Stevens Sound Proofing Co. of Chicago, manufacturers of patented structural products for sound insulating in walls, floors and ceilings, and for constructing anti-vibration platforms under machinery. The acquiring of these products makes an important addition to the present line of Johns-Manville acoustical materials, consisting of Nashkote felts in various forms with both perforated and plain covers; Nashtile with a plastic finish and Sanacoustic tile, the latter product being a perforated metal tile containing rock wool. Each of these products is designed to fill a specific need, and the group represents the latest developments in the acoustical field. The Stevens systems have been widely used by well known architects and engineers to prevent vibration and sound from passing beyond its source in apartments, hotels, hospitals, office

BRIDGE THE GAP BETWEEN PROFIT AND LOSS WITH--



LET ECONOMY ARCHES BEAR THE BURDEN OF YOUR LOCOMOTIVE COMBUSTION AND ARCH PROBLEMS—OUR ENGINEERS HAVE SOLVED THE MYSTERY OF "PROFIT AND LOSS" MORE THAN JUST A "BRICK" —ECONOMY OF APPLICATION AND A NEW PRODUCT.

WHY NOT MAKE A PERMANENT CURE OF THESE "ILLS" NOW?

Economy Arch Company

Railway Exchange Bldg. St. Louis, Mo.

buildings, theaters, broadcasting studios, schools and clubs. During the last five years the Johns-Manville Corporation has treated more than 1,000 banks, brokerage offices, business buildings and corporation law offices in the New York financial district for the reduction of noise.

Sheet Steel Booklet

The Inland Steel Co., Chicago, has issued a booklet and two folders recently on its sheet steel products. The booklet, "Inland Open Hearth Sheet Steel Products", describes briefly all the many grades of Inland steel sheets, gives standard extras and differentials, tables of tolerances and weights, and includes a section describing trade customs and practices. One folder, "Inland-Gal-Van-Alloy Steel Sheets", describes the company's new coated sheet steel, which does not flake because the coat is alloyed to the base metal, and is especially designed to take paint finishes better. The other folder, "Enduring Sheets at Low Cost", includes some interesting new data on Inland Copper Alloy Steel Sheets, the company's rust and corrosion-resisting product.

Feed Water Book Revised

Revised editions of the operating instruction book on the Coffin Feed Water Heater System are now ready for distribution to interested persons who will write to the J. S. Coffin, Jr., Company, Englewood, N. J.

Freight Car Orders

There were 33,723 freight cars on order on May 1. On the same day last years there were 44,429 cars on order and 22,242 on order on May 1, 1928. Despite the fact that the number of freight cars on order on May 1 this year was 10,706 below the number a year ago, the new freight cars installed in service during the first four months of this year numbered 34,725, compared with 15,927 for the same period in 1929, or an increase of 18,798 cars. This was also an increase of 19,090 cars above those installed for the same period in 1928.

Freight cars on order on May 1 showed that 18,434 were box cars, a decrease of 1,145 compared with the same date last year. Coal cars numbered 11,838, a decrease of 8,202 compared with the orders on May 1, 1929. Refrigerator cars totaled 1,886; flat cars, 1,225; stock cars, 240, and other miscellaneous freight cars, 100.

Freight car inquiries since the May issue of *Transportation* were as follows: the Amtorg Trading Co., 450 gondola and hopper cars of 66 tons capacity; Anaconda Copper & Mining Co., 17 tank cars; Chicago & North Western, ten 70-ton flat cars; Gulf Refining Co., 250 40-ton tank cars; Illinois Central, 2,200 freight cars, consisting of 1,000 auto-furniture cars, 500 70-ton hopper cars, 200 flat cars, and 500 mill type gondolas, bids opened May 17; Illinois Steel Co., five flat cars; the Minneapolis & St. Louis has withdrawn its inquiry for 500 box cars; Union Pacific, 20 70-ton ore cars; United Fruit Co., 25 tank and 15 fruit cars; Western Electric Co., five to 15 100-ton flat cars; Western Fruit Express, 100 steel underframes; and the Philippine Railway, 20 cane and ten box cars.

Freight car orders received as follows: Magor Car Corpn. from the Anglo-Chilean Consolidated Nitrate Corpn. for 225 20-ton steel flat cars, and 20 20-ton steel box cars, and from the Oliver Mining Co. for ten air-dump cars; Canadian Car & Foundry Co., from the Canadian Pacific for 150 80-ton ore cars; General American Tank Car from the Carnegie Steel Refining Co. for three tank cars; also orders from the Milwaukee for 500 stock cars, and the United Refrigerator Transit Co. for 500 refrigerator cars; Pressed Steel Car Co. from Fruit Growers' Express for 166 steel underframes; Western Pipe & Steel Co., San Francisco, 500 underframes from the Pacific Fruit Express; and the Pullman Car & Mfg. for 66 gondolas from the Warrior River Terminal. The St. Louis-San Francisco is building 300 gondolas at the rate of five a day in its Yale shops at Memphis.

Locomotive Orders

Reports filed with the car service division of the American Railway Association show that Class 1 railroads had 8,222 locomotives in need of repair or 14.7 per cent of the number on line on May 23. This was a decrease of 746 compared with the number in need of repair on April 15, at which time there were 8,968 or 16.0 per cent. Class 1 roads, on May 1, had 7,294 serviceable locomotives in storage compared with 7,311 on April 15.

The railroads also had more locomotives on order May 1, than on any similar date since 1926, the number on that day this year being 362. On May 1, last year, there were 346 locomotives on order. Locomotives placed in service in the first four months this year totaled 283 compared with 166 in the same period in 1929 and 531 in 1928.

Locomotive inquiries since the May issue of *Transportation* are as follows: The Alton & Southern, one or two switching locomotives; the Amtorg Trading Corpn., asking for a number of locomotives for shipment to Russia; Chicago Great Western, 15 2-10-4 type locomotives; Reading Company, 10 locomotives; South Buffalo Railway, two eight-wheel switching locomotives. Baldwin has received orders from the Indianapolis Union for four switching locomotives. The Canadian Locomotive Company has an order from the Temiskaming & Northern Ontario for four consolidated type locomotives. American Locomotive Company received orders from the Bangor & Aroostook for three 4-8-2 locomotives; from the Electro Metallurgical Company of Canada for one 4-wheel connected-tank locomotive to be built by its subsidiary, the Montreal Locomotive Works, Ltd.; from the General American Tank Car Corpn., for one switching locomotive, and from the Wierton Steel Co. for one switching locomotive.

Passenger Car Orders

Since the May issue of *Transportation* the following passenger car inquiries have been made: The Boston & Maine, four diners for limited train service; the Erie, 20 suburban coaches and three 70-foot mail and express cars; the Illinois Central, five baggage and express cars, and five horse-baggage cars; and the Richmond, Fredericksburg & Potomac, two passenger coaches.

Passenger car orders were as follows: The Canadian National, five baggage cars from the National Steel Car Corpn.; the Canadian Pacific, two gas-electric rail-motor cars from the International Equipment Company; the Chicago, Milwaukee, St. Paul & Pacific, two diners from the Pullman Car and Mfg. Co.; the Erie, five express cars from the American Car & Foundry Co., and 20 suburban coaches from the Standard Steel Car Co.; the Lehigh Valley, two gas-electric rail-motor cars, equipped with 600 h.p. units by the Electro-Motive Co., and one trailer from the Osgood Bradley Car Co.; the Minneapolis & St. Louis, four gas-electric rail-motor cars, power plants to be supplied by the Electro-Motive Co., from the St. Louis Car Co.; the Newfoundland Railway, one diner and two sleeping cars from the National Steel Car Corpn.; the New York, New Haven & Hartford, one club car from the Standard Steel Car Co.; the Northwestern Pacific, seven interurban cars and two trailers from the St. Louis Car Co.; the Reading Company, ten steel baggage cars from American Car & Foundry Co.; Southern Pacific, one lounge, and three observation cars from the Pullman Car & Mfg. Co.; and the Sperry Development Co., two special gas rail-motor cars from J. G. Brill Co.

BOSTON AND MAINE
RAILROAD
New North Station—Boston

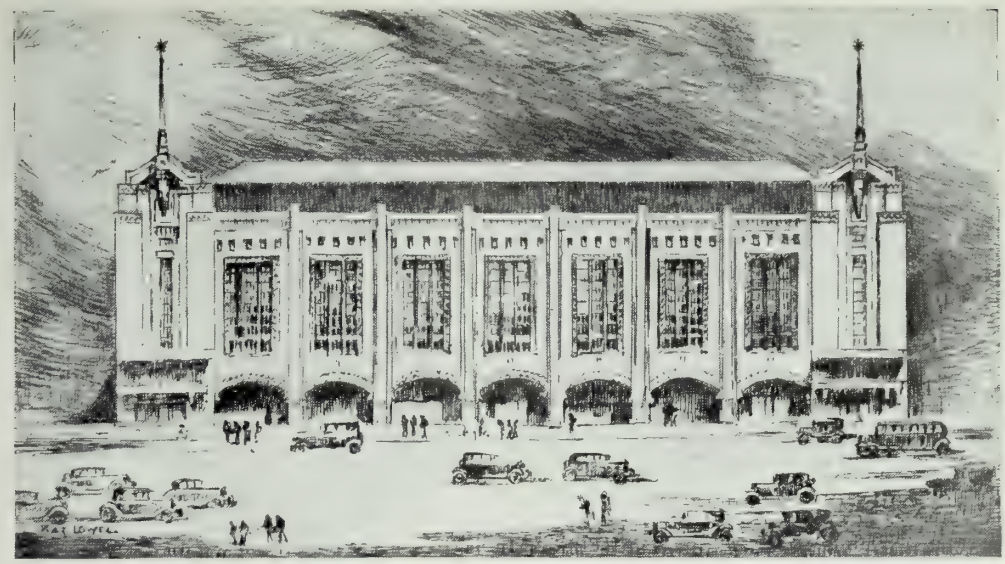
▼

Funk & Wilcox Co.,
Architects
Fellheimer & Wagner,
Associate Architects

▼

United Engineers &
Constructors, Inc.,
Builders

▼



CONSTRUCTION WORK *for* RAILROADS

The long experience of this organization in railroad work and our intimate knowledge of a railroad's problems are proven by the construction of 22 locomotive terminals, 34 shops, 43 power plants and many passenger and freight terminals and other general building and engineering assignments.

In almost every case enumerated, we did the design as well as the construction—cooperating to the fullest extent with the client's own engineering department and producing the new facilities with speed at low cost.

UNITED ENGINEERS & CONSTRUCTORS, INC

Design and Construction of

SHOPS
LOCOMOTIVE TERMINALS
PASSENGER TERMINALS
POWER PLANTS
ELECTRIFICATION
FREIGHT TERMINALS
OFFICE BUILDINGS

Among our many railroad clients have been the following:

Atlantic Coast Line Railroad
Baltimore & Ohio Railroad
Boston & Maine Railroad
Buffalo, Rochester & Pittsburgh Railway
Canadian Pacific Railway
Central Railroad of New Jersey
Chesapeake & Ohio Railway
Chicago, Burlington & Quincy Railroad
Chicago, Rock Island & Pacific Railway
Chicago & Alton Railroad
Chicago & Eastern Illinois Railroad
Chicago & Northwestern Railway
Clinchfield Railroad
Erie Railroad
Great Northern Railway
Illinois Central Railroad
Lehigh Valley Railroad
Louisville & Nashville Railroad
Missouri Pacific Railroad
Mobile & Ohio Railroad
Pennsylvania Railroad
Pittsburgh & Shawmut Railroad
Reading Company
Rutland Railroad
Southern Pacific Lines
Southern Railway
Terminal Railroad Assoc. of St. Louis
Union Pacific Railroad
Wabash Railway

UNITED ENGINEERS & CONSTRUCTORS

INCORPORATED

DWIGHT P. ROBINSON, PRESIDENT

PHILADELPHIA NEW YORK NEWARK CHICAGO
LOS ANGELES BUENOS AIRES RIO DE JANEIRO MONTREAL

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

Railway Construction

Tracks & Yards

CANADA.—The Canadian Pacific has let the following contracts for 145 miles of branch lines in Saskatchewan and Alberta: From Dunelm, Sask., 25 miles along Swift Current Creek, to Stewart & Grant, Winnipeg; the Debben-Meadow Lake part of the Prince Albert and Lac LaBiche line in Saskatchewan, 90 miles, to Hett & Sibbald, Ltd., Prince Albert, and to the Tomlinson Construction Co., Winnipeg; from Crossfield, Alta., southwest, 30 miles, to W. A. Dutton, Winnipeg.

KENTUCKY.—The Southern has let a contract to the Bates & Rogers Construction Co., Chicago, for 14 miles of second main track between Williamstown and Blanchet, and between Sadieville and Rogers Gap.

MISSOURI.—The Milwaukee has let a contract to Peterson, Shorley & Gunther, Omaha, for the construction of sections six and seven of joint double track with the Rock Island into Kansas City, between Moseby, Mo., and Birmingham, 13 miles.

OHIO.—The Cincinnati Union Terminal has let a contract to the C. G. Kershaw Contracting Co., Birmingham, for 55 miles of yard track at Cincinnati.

OREGON.—The Oregon Electric is receiving bids for a line between Lebanon and Sweet Home, and between Sweet Home and a point in the Calapopia Valley, about 30 miles. The cost will be about $1,000,000.

—The Oregon-Washington R.R. & Navigation Co. and the Oregon Short Line have asked permission to abandon 25 miles of the Homestead branch between Robinette and Homestead. Owing to abandonment of mining operations the line has not been paying expenses.

TEXAS.—The Texas Short Line has let a contract to Gifford-Hill & Co., Dallas, for grading for an extension from Grand Saline to Van, 11 miles.

VIRGINIA.—After improvements are started on the Lewis tunnel in Alleghany county, the Chesapeake & Ohio will start work on the improvements to Big Bend tunnel between Alderson and Hinton.

WEST VIRGINIA.—The Chesapeake & Ohio has asked permission to build a line from West Gilbert into Mingo County, five miles, to serve coal lands in the Guyandotte River area.

Buildings & Structures

COLORADO. — Greeley. The Union Pacific has let a contract to the Mead & Mount Construction Co., Denver, for a one-story brick passenger station to cost about $100,000.

CONNECTICUT. — Waterbury. The New Haven has let a contract to the Roberts & Schaefer Co. for a 300-ton reinforced concrete simplex locomotive coaling plant here.

INDIANA.—Michigan City. The Chicago, South Shore & South Bend has let a contract to P. H. Lorenz, Moline, Ill., for a one-story repair shop and office building to cost about $70,000.

MICHIGAN. — Pontiac. The Grand Trunk Western is receiving bids for a three-story concrete and brick express and office building.

MINNESOTA.—Mankato. The Chicago, St. Paul, Minneapolis & Omaha has let a contract to the Graver Tank & Mfg. Corpn., East Chicago, Ind., for a cold process type water softener at this point.

NEW MEXICO.—Las Vegas. The Santa Fe has let a contract to the Roberts & Schaefer Co. for coal, sand, and water facilities that will supply a locomotive with all three materials at one time.

NEW YORK.—Buffalo. Contracts will be awarded soon for a produce terminal and a farmers' market adjacent to the tracks of the Erie and the Nickel Plate, at Clinton street and Bailey avenue. The market will cover about 15 acres. The delivery yard will be open to all railroads, will have a capacity of 350 cars, and storage facilities for 800 cars.

—Manchester. The Lehigh Valley has let a contract to the Graver Tank & Mfg. Corpn., East Chicago, Ind., for a large water softener to be installed here.

—Ft. Edward. The public service commission has ordered the elimination of the Adams Basin crossing of the Delaware & Hudson, three miles north of here. The cost will be about $92,000, exclusive of land and damages.

—Cayuta. The Lehigh Valley's estimate of $113,000 for the elimination of the Decker Crossing here has been approved by the public service commission.

—Bowmansville. The public service commission has approved the New York Central's estimate of $285,700, exclusive of land and damages, for the elimination of the Genesee street crossing.

—Cheektowaga. The public service commission has approved the elimination of the Ludwig avenue crossing of the Erie, the Lehigh Valley, and the Lackawanna at this point. The cost will be about $300,000.

—Tully. The Lackawanna has permission to let a contract to the Porterfield-Binger Construction Co., Youngstown, Ohio, for eliminating a grade crossing on the La Fayette-Tully highway at this point.

—Mooers Forks. The Rutland R.R. Co. has let a contract to the Caledonia Rock Products Corpn., Bristol, Vt., for an underpass in connection with the elimination of a grade crossing here. The cost will be about $25,500.

OHIO.—Cincinnati. The Chesapeake & Ohio has let a contract to the Cleveland Wrecking Co. for removing buildings between John and Baymiller, and Third and Fourth streets preparatory to building a six-story freight station and warehouse to cost about $750,000.

—Dayton. The Dayton & Union has let a contract to the American Bridge Co., Pittsburgh, for the grade separation structures in the track elevation work here. The cost will be about $430,000.

PENNSYLVANIA. — West Philadelphia. The Pennsylvania has let a contract to the Roberts & Schaefer Co. for a 500-ton, 4-track, reinforced concrete simplex roller skip automatic electric type locomotive coaling plant.

—Philadelphia. The Pennsylvania has let a contract to the George A. Fuller Co., Philadelphia, for locomotive facilities in the Forty-sixth street yard, to cost about $347,000.

—Jacob's Creek. The Pittsburgh & West Virginia has let a contract for the superstructure of a single-track steel and concrete bridge over the Youghiogheny River to cost about $300,000. The concrete piers are now being built by the Vang Construction Co., Cumberland, Md.

TEXAS.—El Paso. To obtain a permanent water supply for its locomotives, and for domestic use by a number of towns in southeastern New Mexico, the Southern Pacific will construct a dam on Bonito Creek, 26 miles west of Carrizozo. Equipment is being assembled for construction. The cost will be about $500,000. Water will be piped to Carrizozo, Luna, Gallinas, Pastura, Coyote, Ancho, Corona, Torrance, Duran and Vaughn.

—Big Springs. The Texas & Pacific has let a contract to the Railway Engineering Equipment Co. Chicago, for a high pressure direct steaming system at the 23-stall enginehouse here.

—Annona. Allhands & Davis, Joplin, Mo., has a contract from the Texas & Pacific for a reservoir at this point.

WEST VIRGINIA.—Deepwater. The Virginian Ry. has permission to build a bridge over the Kanawha River at this

TEXAS & PACIFIC RAILROAD

Lancaster Yard Terminal

SHOPS, ROUNDHOUSE AND POWER PLANT ALL WIRED WITH OKONITE

Okonite Products

OKONITE INSULATED WIRES AND CABLES
VARNISHED CAMBRIC CABLES
OKONITE INSULATING TAPE
MANSON FRICTION TAPE
OKONITE CEMENT
OKOCORD
OKOLOOM

Okonite-Callender Products

IMPREGNATED PAPER CABLES
SUPER-TENSION CABLES
SPLICING MATERIALS

THE OKONITE COMPANY

THE OKONITE-CALLENDER CABLE COMPANY, INC.

Factories: Passaic, N. J. Paterson, N. J.

SALES OFFICES: NEW YORK · CHICAGO · PITTSBURGH · ST. LOUIS · ATLANTA
BIRMINGHAM · SAN FRANCISCO · LOS ANGELES SEATTLE · DALLAS

General Electric Supply Corp., Boston, Mass.
Novelty Electric Co., Philadelphia, Pa. F. D. Lawrence Electric Co., Cincinnati, O.
Canadian Representatives: Engineering Materials Limited, Montreal
Cuban Representatives: Victor G. Mendoza Co., Havana

OKONITE

OKONITE-CALLENDER

point. The structure will cost $1,000,000. It will enable the Virginian to transfer traffic to the Kanawha & Michigan Ry., a subsidiary of the New York Central System.

WISCONSIN.—Janesville. The Milwaukee has let a contract to the Worden Allen Co., Milwaukee, for a warehouse and office building here.

Changes in Personnel

Executive & Operating

George D. Brooke, general manager of the Chesapeake & Ohio at Richmond, Va., has been appointed vice president and general manager with the same headquarters. **R. N. Begien,** vice president in charge of operation, engineering and construction, remains in charge of engineering and construction. **M. S. Connors,** general manager of the Hocking Valley at Columbus, Ohio, has been appointed assistant to Mr. Brooke with headquarters as before at Columbus. **E. L. Bock,** general superintendent of the western district with headquarters at Huntington, W. Va., has had his jurisdiction extended to include the Hocking Valley. **J. T. Fitzgerald,** superintendent of freight transportation of the Hocking Valley at Columbus, has been appointed assistant superintendent of transportation of the Chesapeake & Ohio with the same headquarters. **W. W. Houston,** superintendent of the Hocking Valley, remains at Columbus as superintendent of the Hocking division of the Chesapeake & Ohio. **F. D. Beale,** division superintendent of the Chesapeake & Ohio at Richmond, has been appointed to the newly created position of assistant general superintendent of the western general division with headquarters at Huntington, W. Va. **E. D. Glenn,** assistant superintendent of the Clifton Forge division at Ronceverte, W. Va., succeeds Mr. Beale.

Clinton G. Sibley, general superintendent of the Atlantic Coast Line at Rocky Mount, N. C., has been appointed assistant general manager with headquarters at Wilmington. **F. A. Hansard,** trainmaster, has been appointed superintendent of the Ocala district with headquarters at Ocala, Fla., succeeding **F. B. Langley,** appointed superintendent of transportation of the third division with headquarters at Jacksonville.

V. H. Wilson has been appointed acting superintendent of the Los Angeles division of the Santa Fe Lines, succeeding R. H. Tuttle, granted leave of absence.

G. H. Foster, assistant superintendent of the Portland division of the Maine Central, has been appointed transportation assistant in the office of the vice president and general manager, succeeding **F. O. Wood,** appointed superintendent of the Portland division with headquarters at Portland. Mr. Wood succeeds **Frank J. Runey,** retired.

Bowman H. Moore has been elected secretary of the presidents' conference committee on valuation with headquarters at Philadelphia, succeeding **Frederick H. Lee,** deceased.

E. B. Martin has been appointed vice president of the Mississippi Export R.R. with headquarters at Moss Point, Miss.

The Burlington announces the appointment of **H. C. Murphy** as superintendent of the Alliance division with headquarters at Alliance, Neb., succeeding **H. J. Hoglund,** promoted.

D. D. Moffat has been appointed vice

AGENCIES OF PROGRESS

"Economic information becomes more important to the fruit and vegetable industry with each new development in its transportation facilities, and in its technic for preventing the deterioration of perishables. These *agencies of progress,* as is well known, have enormously extended the distribution area of the fruit and vegetable growers. They have made available the year round such formerly seasonal products as lettuce and celery, citrus and core fruits. Such products are now commercially grown thousands of miles from leading consuming markets.* . . . . .

"If production is to be kept in a satisfactory relationship to market requirements adequate statistics of supply and demand are indispensable. When production outruns consumption the producers suffer materially, but it does not follow that the consumer benefits."**

* In 1929 the Pacific Lines of the Southern Pacific handled 240,470 cars of perishables much of which traveled more than 3000 miles to market.

**From report of Secretary of Agriculture, Page 27, Yearbook 1928.

Southern Pacific

SIMPLIFIED TRAIN OPERATION

Modern railroading reaches its high state of efficiency through the simplifying of each mechanical action involved in train operation.

One of the most important of these improvements is accomplished by AUTOMATICALLY coupling air, steam and signal hose.

More than 150,000 train miles of service over every large railroad in the United States without a single delay, is conclusive evidence that AMERICAN AUTOMATIC CONNECTORS are fool-proof.

Their universal adoption will bring about the greatest improvement of the present generation in railroading.

AMERICAN AUTOMATIC CONNECTORS MEET MODERN RAILROAD DEMANDS

THE CONSOLIDATED CONNECTOR CORPORATION
118 Noble Court • Cleveland • Ohio

president of the Bingham & Garfield Ry. with headquarters at Salt Lake City. **F. O. Haymond**, general superintendent, has been appointed general manager with headquarters at Salt Lake City, succeeding **L. S. Cates**, resigned.

Financial & Legal

C. C. Handy, general attorney of the New York Central at Cleveland, has been appointed general attorney, Buffalo and East division with headquarters in New York, succeeding **A. S. Lyman**, deceased. The jurisdiction of **W. N. King**, general attorney at Cleveland, has been extended to include that of Mr. Handy. **F. L. Wheeler** and **W. Mann**, assistant general attorneys at New York, have been appointed to the newly created positions of principal assistant general attorneys.

Harry W. Rush, assistant treasurer and assistant secretary of the Chicago & North Western, has been elected treasurer and assistant secretary with headquarters at New York. **C. H. Vail** has been appointed assistant treasurer and assistant secretary.

D. J. Buckley, division accountant of the Pennsylvania division of the Delaware & Hudson with headquarters at Albany, has been appointed general assistant to the auditor of disbursements. **W. F. Reidy**, chief clerk, succeeds Mr. Buckley.

R. S. Claar, resident engineer of the Soo Line with headquarters at Minneapolis, has been appointed right of way and real estate agent of the Soo Line and the Duluth, South Shore & Atlantic with the same headquarters. Mr. Claar succeeds **John E. Westlake**, resigned.

F. D. Hodgson, controller of the Hocking Valley at Columbus, Ohio, has been appointed assistant controller of the Chesapeake & Ohio Lines with headquarters at Richmond, Va.

L. E. McKeand, assistant to the president and treasurer of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, has been appointed assistant controller with the same headquarters.

W. H. Marsh, assistant to the president of the Spokane, Portland & Seattle, with headquarters at Portland, has also been elected secretary.

J. E. Willis, secretary and treasurer of the Hardwick & Woodbury Ry. with headquarters at Montpelier, Vt., has been appointed controller of the St. Johnsbury & Lake Champlain, Montpelier & Wells River, and Barre & Chelsea, with the same headquarters.

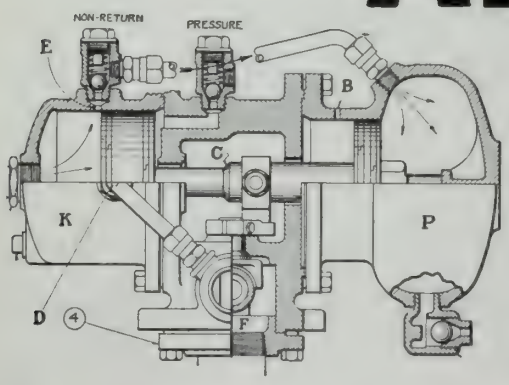
Purchases & Stores

A. Singleton, purchasing agent of the Hocking Valley at Columbus, Ohio, has been appointed assistant purchasing agent of the Chesapeake & Ohio Lines at Richmond, Va. **J. C. McCaughan**, general storekeeper of the Hocking Valley at Columbus, has been appointed assistant general storekeeper of the Chesapeake & Ohio, with the same headquarters. These changes are incidental to the assumption of control of the Hocking Valley by the Chesapeake & Ohio. **W. H. Stowasser**, storekeeper of the Chesapeake & Ohio at Covington, Ky., has been transferred to Fulton, Va., succeeding **G. A. McTyre**, transferred to Covington. **J. G. Hilgen**, storekeeper at Richmond, has been appointed division storekeeper at Russell, Ky. **E. T. Campbell**, storekeeper at Russell, has been appointed division storekeeper at Richmond.

A. J. Baker, storekeeper of the western division of the Santa Fe Lines at Dodge City, Kan., has been transferred to the Oklahoma division at Arkansas City, Ark., succeeding **R. E. Cochrun**, transferred to the middle division at Newton, Kan. **L. R. Herring**, storekeeper at Waynoka, Okla., succeeds Mr. Baker.

SEE

DRIFTING VALVES **ARDCO** SAFETY CYLINDER COCKS

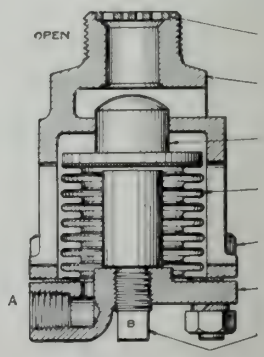


at the CONVENTION

Aisle "F"

Space 303

MAIN FLOOR



The cushioning effect of ARDCO DRIFTING VALVES on reciprocating parts is helping materially in reduction of locomotive maintenance costs. Improved lubrication by prevention of carbonization.

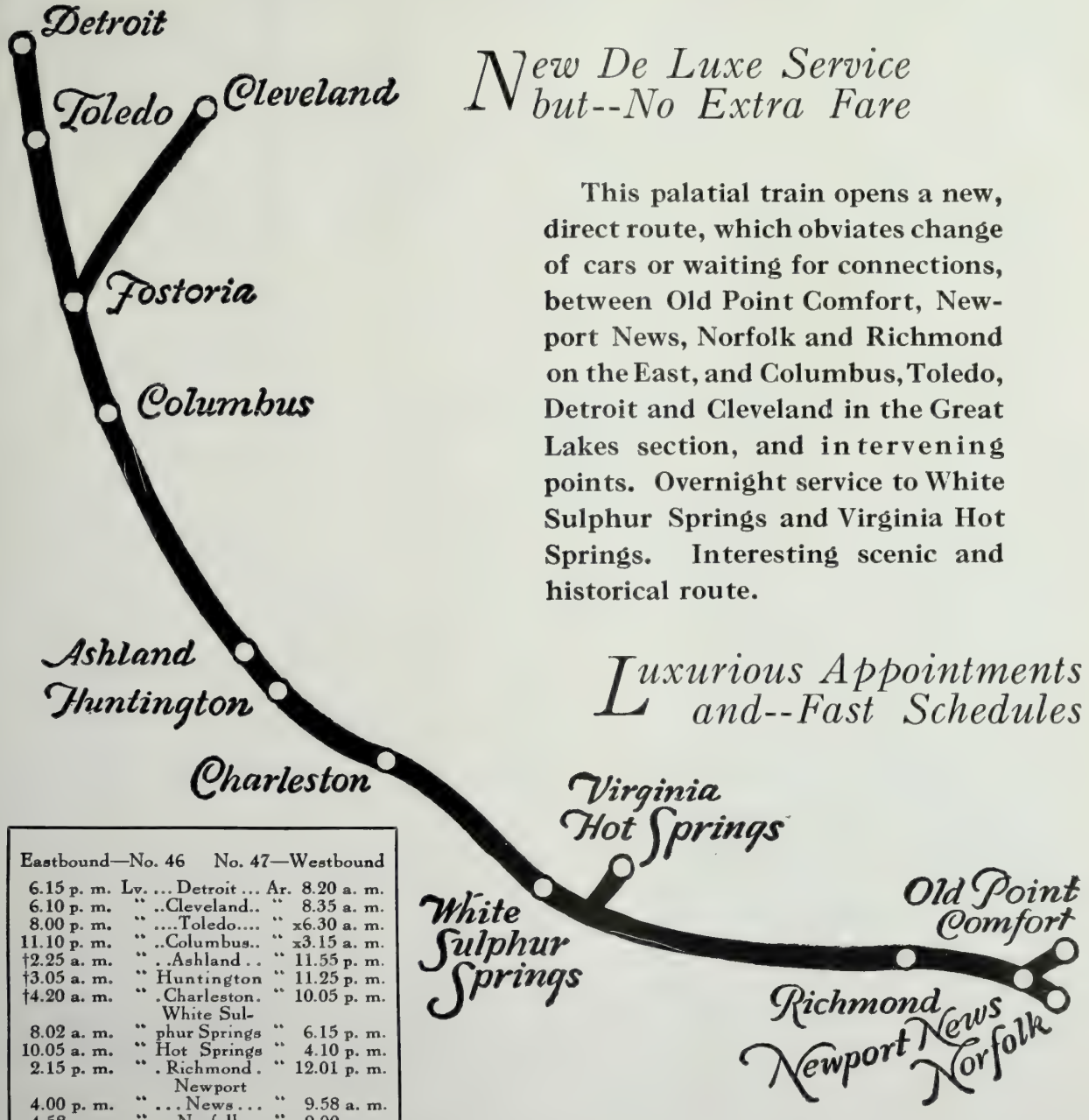
The use of an expanding copper bellows in the improved ARDCO SAFETY CYLINDER COCK eliminates air leakage and renewal of piston rings.

WE WILL GLADLY EXPLAIN THESE FEATURES TO YOU AT ATLANTIC CITY

ARDCO MANUFACTURING CO.

420 Lexington Ave. New York | 8 Irvington St. Boston | Main Office, 1 Newark St. Hoboken, N. J. | 14 E. Jackson Blvd. Chicago

THE SPORTSMAN



New De Luxe Service but--No Extra Fare

This palatial train opens a new, direct route, which obviates change of cars or waiting for connections, between Old Point Comfort, Newport News, Norfolk and Richmond on the East, and Columbus, Toledo, Detroit and Cleveland in the Great Lakes section, and intervening points. Overnight service to White Sulphur Springs and Virginia Hot Springs. Interesting scenic and historical route.

Luxurious Appointments and--Fast Schedules

Eastbound—No. 46			No. 47—Westbound
6.15 p. m.	Lv.	... Detroit ... Ar.	8.20 a. m.
6.10 p. m.	"	..Cleveland.. "	8.35 a. m.
8.00 p. m.	"	....Toledo.... "	x6.30 a. m.
11.10 p. m.	"	..Columbus.. "	x3.15 a. m.
†2.25 a. m.	"	..Ashland.. "	11.55 p. m.
†3.05 a. m.	"	Huntington "	11.25 p. m.
†4.20 a. m.	"	.Charleston. "	10.05 p. m.
8.02 a. m.	"	White Sulphur Springs "	6.15 p. m.
10.05 a. m.	"	Hot Springs "	4.10 p. m.
2.15 p. m.	"	.Richmond. "	12.01 p. m.
4.00 p. m.	"	Newport ... News ... "	9.58 a. m.
4.58 p. m.	"	.. Norfolk .. "	9.00 a. m.
4.30 p. m.	"	..Old Point.. "	9.15 a. m.

† Sleepers from Toledo and Columbus may be occupied at Ashland until No. 34 leaves 6:45 a. m., arriving Huntington 7:20 a. m., Charleston 9:00 a. m.
x Sleepers from Charleston may be occupied at Columbus and Toledo until 7:30 a. m.

The Chesapeake and Ohio Lines

Traffic

J. W. Flannery, for the last ten years general traffic manager of the Kroger Grocery & Baking Co., with headquarters at Cincinnati, has resigned to accept the position of assistant traffic manager of the Frisco Lines with headquarters at St. Louis. The appointment is effective June 1. Mr. Flannery will have charge of off-line solicitation throughout the United States. **G. B. Davis,** assistant to the vice president in charge of traffic of the Frisco Lines with headquarters at St. Louis, will now have charge of the mail, baggage and express traffic.

George Stephen, traffic manager of the Canadian Pacific, has been appointed vice president in charge of traffic with headquarters at Montreal. Mr. Stephen succeeds **W. R. MacInnes,** who has retired after 45 years' active service.

Fred N. Hicks, assistant traffic manager of the Milwaukee at Seattle, has been appointed western traffic manager with the same headquarters.

J. A. Hickman, assistant general freight agent in charge of industrial development of the Big Four with headquarters at Cincinnati, has been appointed manager of industrial development with the same headquarters. **W. F. Benning,** division freight agent at Indianapolis, has been appointed assistant general freight agent. **H. B. Wood,** freight agent at Dayton, Ohio, has been appointed assistant general freight agent with headquarters at Cleveland.

H. Q. Wasson, general freight agent of the Hocking Valley with headquarters at Columbus, Ohio, has been appointed assistant general freight and passenger agent of the Chesapeake & Ohio with the same headquarters. **I. W. Morris,** assistant general freight agent of the Hocking Valley at Columbus, has been transferred to the Chesapeake & Ohio at Chicago. **W. H. Fisher,** general passenger agent of the Hocking Valley at Columbus, has retired. The jurisdiction of **T. H. Gurney,** passenger traffic manager of the Chesapeake & Ohio at Richmond, Va., has been extended to include the Hocking division.

The Union Pacific System announces the appointment of **R. G. Owen** as assistant to freight traffic manager with headquarters at San Francisco. Mr. Owen's duties will include the solicitation of perishable freight traffic.

F. H. Baird, division passenger agent of the New York Central at Cleveland, has been appointed assistant general passenger agent in charge of solicitation for that road and the Big Four. **E. C. Cook,** assistant general passenger agent of the New York Central at Toledo, has also been appointed assistant general passenger agent of the Big Four and the Michigan Central.

F. A. Key, Jr., general freight and passenger agent of the Louisiana & Arkansas with headquarters at Shreveport, La., has been appointed traffic manager in charge of rates and divisions. **H. R. Whiting,** general freight agent, has been appointed traffic manager in charge of solicitation.

R. D. Taylor has been appointed assistant general baggage agent of the Santa Fe Lines at Los Angeles, succeeding **Harry Isaacs,** deceased.

N. J. Ferguson, general freight and passenger agent of the Napierville Junction Ry., with headquarters at Montreal, will serve in the same capacity on the Delaware & Hudson at Montreal, succeeding **James Fitzsimons,** deceased.

Mechanical

L. D. Freeman, assistant to the chief mechanical officer of the Chesapeake & Ohio at Richmond, Va., has been appointed assistant superintendent of motive power with headquarters at Huntington, W. Va. Mr. Freeman will have charge of the locomotive shop at Huntington and the car shop at Russell, Ky. The general master mechanic is relieved of the jurisdiction over these shops. **J. W. Small,** chief mechanical officer with

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back east
low fares
now in effect...
Good to Oct. 31st
FASTEST TRAINS from Los Angeles to the EAST
Make Reservations Promptly
Santa Fe
W. J. BLACK
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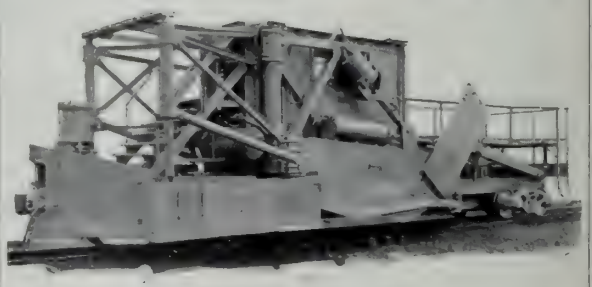
Meets Every Railway Spreading and Ditching Requirement
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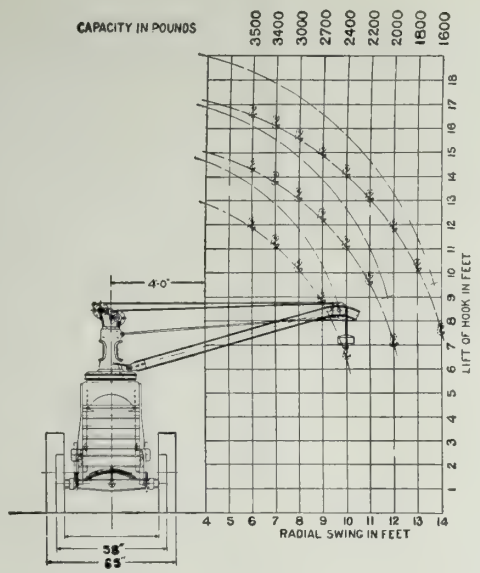
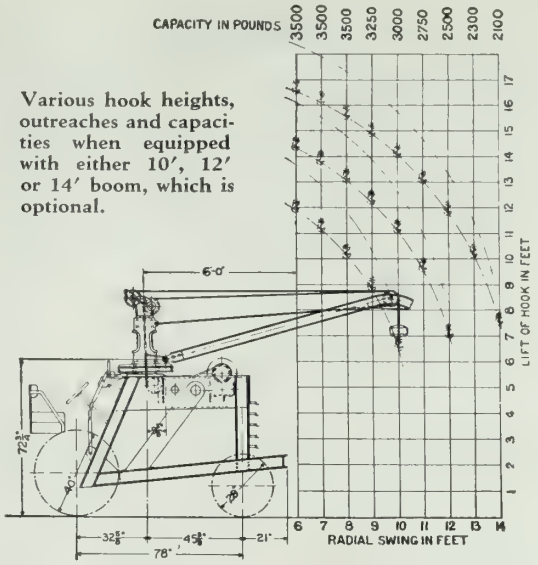
East Chicago, Indiana
Walter J. Riley, President

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3500 3500 3500 3250 3000 2750 2500 2300 2100
Various hook heights, outreaches and capacities when equipped with either 10′, 12′ or 14′ boom, which is optional.
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RADIAL SWING IN FEET
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78"

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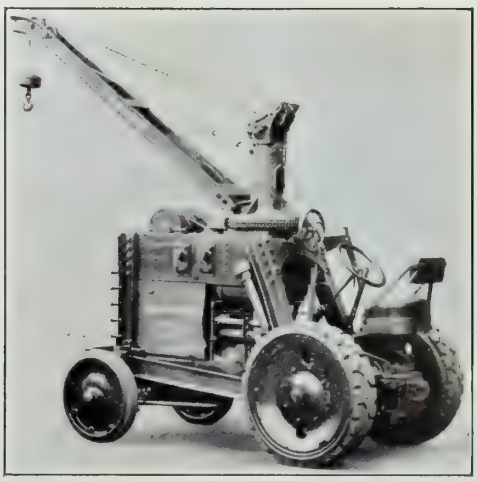
SWING-CRANE

In and about railroad repair shops, storage yards, freight terminals, transfer points and scrap and reclamation yards the Loadmaster Swing Crane is found to be a most valuable piece of equipment.

A study of the charts will tell a more convincing story of the wide field of usefulness of this sturdy, versatile Loadmaster Swing Crane than could be recounted in several pages of printed description.



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headquarters at Richmond, Va., has been granted a year's leave of absence. **M. A. Kinney,** superintendent of motive power of the Hocking Valley, has been appointed general master mechanic of the Chesapeake & Ohio with jurisdiction over the Hocking and Chicago divisions. **T. F. Barton,** general master mechanic of the Chesapeake & Ohio at Huntington, has been appointed superintendent of motive power with headquarters at Richmond. **C. B. Hitch,** master mechanic at Covington, Ky., succeeds Mr. Barton. **R. G. McKee,** master mechanic at Peru, Ind., has been transferred to Russell.

The Northern Pacific announces the appointment of **F. G. Moody** as acting master car builder, succeeding **H. M. Robertson,** granted leave of absence because of ill health.

The Burlington announces the appointment of **G. B. Pauley** as master mechanic of the Casper division with headquarters at Casper, Wyo., succeeding **H. E. Felter,** transferred. **T. E. Paradise** has been appointed master mechanic of the Alliance and Sheridan divisions with headquarters at Alliance, Neb.

L. E. Fletcher, superintendent of shops of the Santa Fe Lines at La Junta, has been appointed master mechanic of the Arkansas River division and the Colorado division with the same headquarters, succeeding **G. M. Lawler,** transferred to the western division at Dodge City. Mr. Lawler succeeds **A. H. Bierne,** transferred to the New Mexico division with headquarters at Raton.

J. Smith, general foreman on the Canadian National at Toronto, has been appointed superintendent of motive power and car equipment of the Northern Ontario district with headquarters at North Bay, succeeding **J. H. McAlpine,** promoted.

J. McCoy has been appointed master mechanic of the Midland Valley, the Kansas Oklahoma & Gulf, and the Oklahoma City-Ada-Atoka, with headquarters at Muskogee, Okla.

Civil

W. L. Roller, engineer maintenance of way of the Hocking Valley, has been appointed division engineer of the Hocking division of the Chesapeake & Ohio, with headquarters as before at Columbus, Ohio. **P. B. Snyder** has been appointed assistant division engineer of the Hocking division.

The Central of Vermont has appointed **R. D. Garner,** chief engineer with headquarters at St. Albans, Vt., succeeding **P. D. Fitzpatrick.**

F. A. Jones, division engineer of the Omaha and Northern Kansas divisions of the Missouri Pacific with headquarters at Falls City, Neb., has been transferred to the Kansas City Terminal division, replacing **R. G. Bush,** transferred to the Omaha and Northern Kansas division.

The Chicago & North Western has appointed **E. G. Day,** division engineer of the Peninsula division with headquarters at Escanaba, Mich., succeeding **G. Loughnane,** retired.

Obituary

James E. Sague died at his home in Poughkeepsie, N. Y., May 9, aged 67. Mr. Sague was a former member of the public service commission in New York, and at one time first vice president of the American Locomotive Works.

Conrad F. Krebs, controller of the Chicago Great Western and former controller of the Illinois Central System, died in Chicago, May 11, aged 74. Mr. Krebs had been in railway work for 51 years.

A. L. Grandy, assistant to the vice president, and former chief engineer of the Pere Marquette with headquarters at Detroit, died in that city, May 3.

R. W. Graham, retired superintendent of construction of the western lines of the Canadian National, died at Prince Albert, Sask., May 2, aged 68.

B. J. Rowe, coal traffic manager of the Illinois Central System with headquarters at Chicago, died May 12, aged 65. Mr. Rowe had been in railway service for 41 years, and coal traffic manager of the Illinois Central since 1914.

A. G. Armstrong, attorney for the eastern and western lines of the Santa Fe with headquarters at Topeka, died May 1.

W. A. Libkeman, manager of sales of the western district of the Standard Steel Car Co. at Chicago, died May 13.

William C. Reitz, vice president of the Pittsburgh Steel Co., died in Pittsburgh, May 4, aged 74.

George Deeks, president of the Dominion Construction Co., died at Toronto, May 1, aged 72.

N. J. Van Schoyck, manager mail and express traffic of the Milwaukee with headquarters at Chicago, died in that city, April 30.

M. W. Cooley, formerly general manager of the Uintah Ry., died at Grand Junction, Colo., April 29, aged 75.

E. S. Locke, treasurer of the Louisville & Nashville, died in Louisville, April 27, aged 56.

H. F. Ricker, treasurer and assistant secretary of the Gulf Mobile & Northern, died at Mobile, April 22.

H. I. Miller, retired railroad executive, died in New York, April 22, aged 68.

W. M. Robinson, president and general manager of the Augusta & Summerville R. R., died at Augusta, Ga., April 17, aged 82.

Supply Trade Notes

The Westinghouse Electric & Manufacturing Co. has made the following changes in personnel: **W. S. Rugg,** vice president in charge of engineering, will also have charge of sales activities. Mr. Rugg takes over the duties of **E. D. Kilburn,** resigned. **S. M. Kintner,** director of the Westinghouse Research Laboratory, has been appointed assistant vice president in charge of the engineering department under the direction of Mr. Rugg.

Marshall D. Raymond has been appointed sales representative of the **American Locomotive Co.** and the **Railway Steel-Spring Co.,** to be associated with George B. Powell, district sales manager with headquarters at St. Louis. Mr. Raymond, after serving with the A.E.F., was graduated from Columbia University in 1923. He served as a special apprentice at the American Locomotive Co., Schenectady Works, for two years. Since 1925 he has been in the sales department of the American Locomotive Co. in New York City.

G. LaRue Masters, sales manager of the **National Lock Washer Co.,** Newark, N. J., has been elected vice president in charge of sales. Mr. Masters joined the company in 1919, taking charge of the sales of car window equipment. He built up the volume so successfully that in 1927 he was made assistant sales manager, and in 1929 became sales manager.

E. A. Doyle, consulting engineer of the **Linde Air Products Co.,** has been elected president of the **American Welding Society.**

The **C. F. Pease Co.,** Chicago, has appointed **W. Earle Pashley** second vice president and assistant sales manager. **C. D. McCormick,** assistant advertising manager, succeeds Mr. Pashley as advertising manager.

G. M. Basford Company announces the removal of its offices from 17 East 42nd street to the Lincoln Bldg., 60 East 42nd street, New York.

Tuco Products Corpn. has moved its Chicago office from the Railway Exchange Bldg. to the Peoples Gas Bldg., 122 South Michigan boulevard.

The General Refractories Co. has appointed the **Harry N. Crowder, Jr., Co.,** Easton, Pa., exclusive sales representatives for high temperature cement in Lehigh and Northampton counties, and adjacent parts of New Jersey.

The Electric Railweld Sales Corpn., Chicago, has created a special department for handling repairs and reinforcement of steel bridges, in charge of **G. W. Hettrick.**

The Pettibone-Mulliken Co., Chicago, has appointed **H. L. Miller,** manager of the electric railway division. Mr. Miller was formerly chief engineer of the Buda Company, Harvey, Ill.

Announcement has been made of the appointment of **Richard F. Straw** as sales manager of the **Wright Manufacturing Co.,** Bridgeport, Conn., makers of Wright hoists, trolleys and cranes.

The New York office of the **Lima Locomotive Works, Inc.,** has been moved from 17 East 42nd street to 60 East 42nd street.

The Ohio Steel Foundry Co. of Lima and Springfield, Ohio, has purchased the steel foundry department and steel casting business of the **Industrial Brownhoist Corpn.,** Cleveland, and Bay City, Mich. The steel foundry at Bay City will be operated by the Ohio Steel Foundry Co. beginning May 1. Extensive improvements are planned, among the first of which will be a modern 15-ton open hearth furnace.

C. L. Newby, assistant manager at Chicago of the **Hyatt**

INTRODUCING
the moderate rate into
modern hotel luxury

Appreciation is complete when you learn the extremely moderate rates at the Hotel Lexington. The luxury of its appointments, the perfection of its French cuisine, the convenience of its location leave nothing else to be desired.

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801 ROOMS. Each with a private bath (tub and shower), circulating ice water, mirror door.

341 with double beds. 1 person $4, two____$5
229 with twin beds. Either 1 or 2 persons____$6
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LEXINGTON AVENUE AT 48TH STREET
NEW YORK CITY

Frank Gregson, Manager Phone MURray Hill 7401

★ Direction of American Hotels Corporation, J. Leslie Kincaid, President ★

Roller Bearing Co., Newark, N. J., has been appointed manager of the western division with the same headquarters.

The Chicago Steel Foundry Co. has appointed **R. C. Bird** sales engineer.

Thomas R. Symington of **T. H. Symington & Son, Inc.**, Baltimore, has resigned and joined the **Symington Company** and the **Gould Coupler Co.** as assistant to the president, with headquarters in New York.

The International Derrick & Equipment Co., Columbus, Ohio, has bought the **Leidecker Tool Co.**, Marietta. The plant will remain at Marietta and no changes will be made in the organization. The New York office of the International Derrick & Equipment Co. has moved from 74 Trinity place to 90 West street.

Joseph M. Welles, western representative of the **Standard Coupler Co.** at Chicago, has resigned to become representative of the **Globe Steel Tubes Co.**, Milwaukee. **Barlow W. Brooks** succeeds Mr. Welles.

The American Arch Co., Inc., has moved its general offices to the Lincoln Bldg., 60 East 42nd street, New York.

The Union Carbide & Carbon Corpn. has consolidated the Kansas City offices of its various units in its new building at 910 Baltimore avenue. The units are: the **Union Carbide Sales Co., J. B. Colt Co., Linde Air Products Co., National Carbon Co., Prest-O-Lite Co., Inc.**, and **Oxweld Acetylene Co.**

Tom M. Girder, chairman of the **Republic Steel Corpn.**, has been elected president, succeeding **E. T. McCleary**, deceased.

The Ohio Brass Co., Mansfield, Ohio, has moved its office in Chicago to 20 North Wacker Drive.

The Franklin Railway Supply Co., Inc., has moved its office to the Lincoln Bldg., 60 East 42nd street, New York.

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Transportation

The National Monthly of the Transportation Industry

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Vol. VII July, 1930 No. 1

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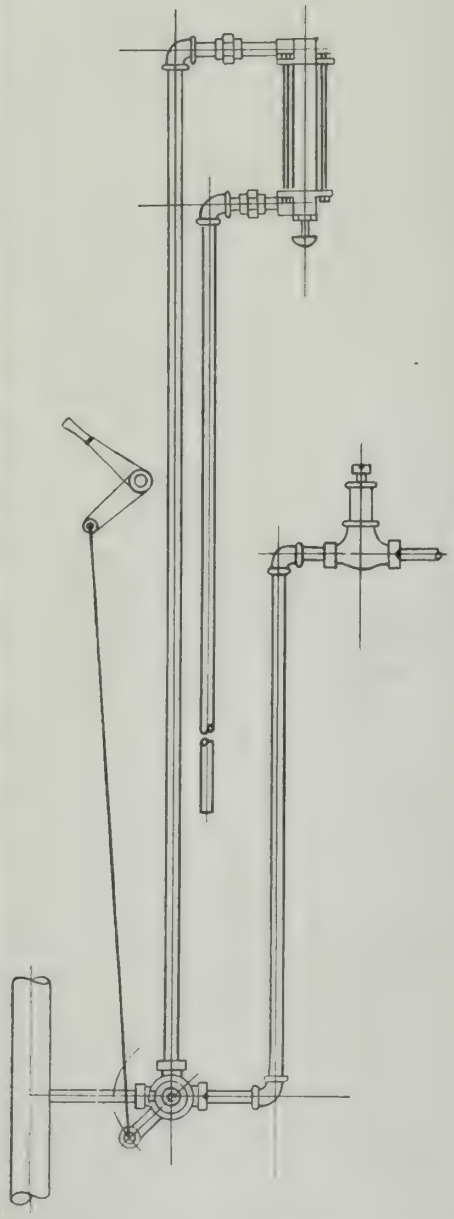

running short of water and the consequent inevitable delays or serious damage—

crawling out on a tender to measure the water supply on a speeding train—sometimes on a dark, cold, stormy night?

THE ECONOMY TENDER WATER LEVEL INDICATOR

shows *in the cab* the amount of water in the tender.

It is simple, positive in action, and cannot get out of order.

Locomotive engineers or firemen will find The Economy is easy to operate and is the *only positive indicator* on the market to stand up in continuous service without requiring maintenance. It is used by both Canadian and American railroads.

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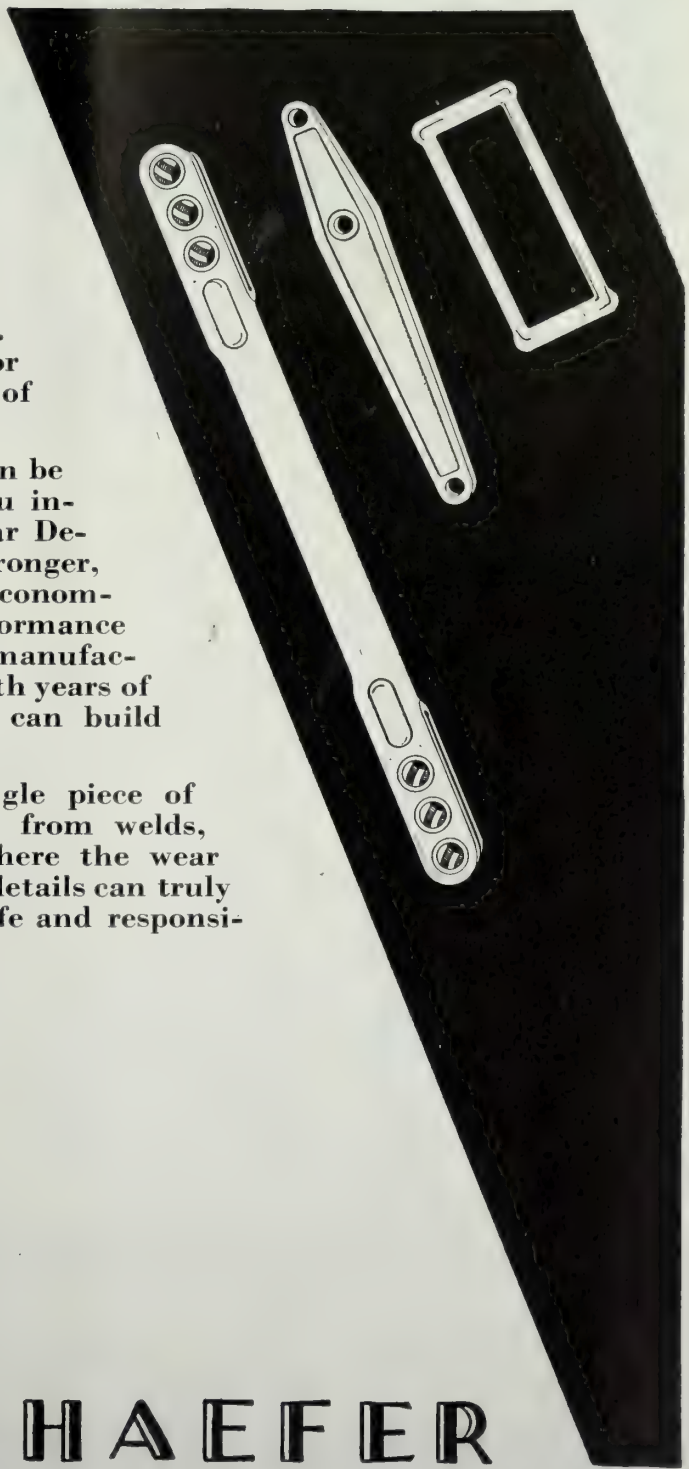

It never pays to judge importance by size.

Brake Gear Details are not large, but their responsibility is great. Regardless of train loads, or speeds, or unusual conditions of service, they must hold.

And these two things you can be certain of getting when you insist on Schaefer Brake Gear Details—details that are stronger, more dependable, more economical in service, and performance that only a seasoned manufacturing organization with years of experience behind it can build into its products.

Forged from a single piece of special steel, free from welds, and reinforced where the wear comes, Schaefer details can truly be considered safe and responsible.

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NO ENGINE IS SO BIG IT DOESN'T NEED THE BOOSTER

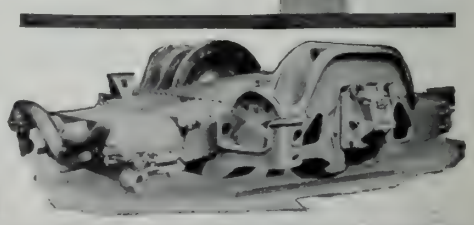
Locomotive design, today, aims at low maintenance.

But maintenance is roughly proportional to the number of driving wheels.

Whatever the power output desired, merely push the button and The Locomotive Booster will give the effect of another pair of drivers and at an average maintenance cost of half a cent per mile against 5 to 10 cents per mile for the extra pair of drivers.

The Locomotive Booster is as essential to efficient locomotive performance as is the low gear to the automobile.

Both are needed for maximum power as well as a smooth start, rapid acceleration and to give extra power on the hills, yet the Booster is usually inoperative and therefore requires little maintenance.



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Transportation

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The National Monthly
of the Transportation Industry

Vol. VII

No. 1

FEATURES *for July,* 1930

Conventions Do Pay, He Says — *Harold A. Smith*

Division V, Mechanical, at Atlantic City, Hears Chairman McManamy of the Interstate Commerce Commission

Millions to Overcome Congestion, — *Charles W. Geiger*

The American Electric Railway Association Convenes at San Francisco

Keeping Up With the Engineers, — *George W. Early*

Something About the Gigantic Dirigibles Now Building at Akron, Ohio

The Story of the Street Car, — *C. K. Lee*

A Westinghouse Engineer Continues the History of Early Days in this Industry

The Great Northern Into California, — *Charles Dillon*

With the Western Pacific This Northern Line Invades Southern Pacific Territory This Summer

When Is a Train Really a Train? — *Lyle J. Iversen*

A Recent Decision Gives Increased Interest to This Discussion of the Safety Appliances Act

Editorial Comment, — *Department*

The News of the Month, — *Department*

End of Season Near

AUGUST is to have only one important railroad meeting—that of the Master Car Builders' and Supervisors' Association. This organization, really a subsidiary of the Mechanical Division of the the American Railway Association, is to gather for what appears likely to be an extremely interesting convention at the Book-Cadillac Hotel, Detroit, August 26 for two days' session. The program announced to the present writing shows addresses by President Aishton of the A. R. A. the tried and true convention speaker of American railroads, and T. C. Powell, president of the Chicago & Eastern Illinois Railroad. The Supply Men's Assn. will have an exhibit.

Talks will be heard about freight containers, explosives, private cars and their handling—meaning freight cars owned by other than railroad companies—, and others about car department matters by representatives of the C. & N. W., the Soo Line, and the Pere Marquette.

June, the big month of big conventions, was indeed a busy 30 days. The superintendents met at Minneapolis; the Protective Section at Buffalo, June 17-19; the Freight Station Section at Louisville, June 17-20; the American Electric Railway Assn. at San Francisco and Los Angeles, June 23-26; Safety Section at Denver, June 24-26, and Divisions V, VI, and VIII at Atlantic City, June 18-25. The Development Association met at Duluth June 18-20, and the Electrical Engineers at Atlantic City June 16.

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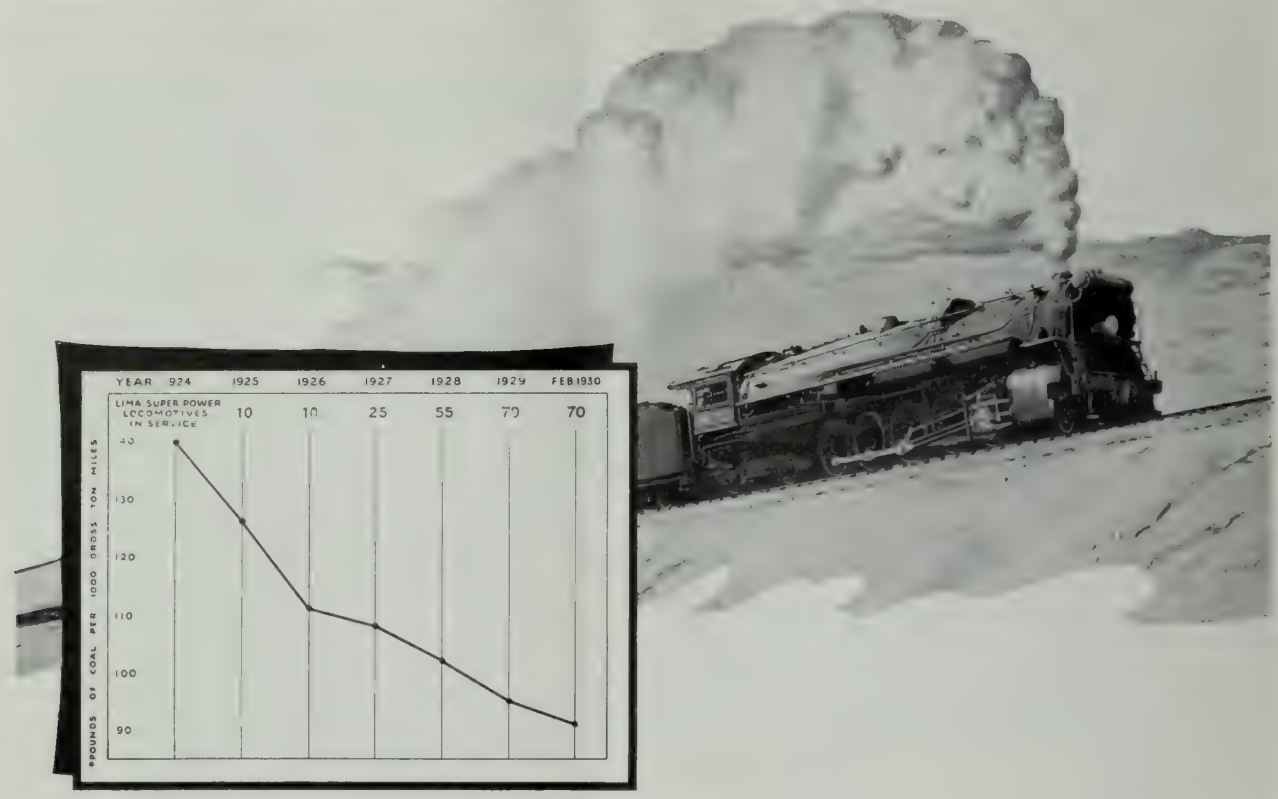


The Texas & Pacific with SUPER-POWER Locomotives

Leads All Class 1 Railroads In Fuel Economy

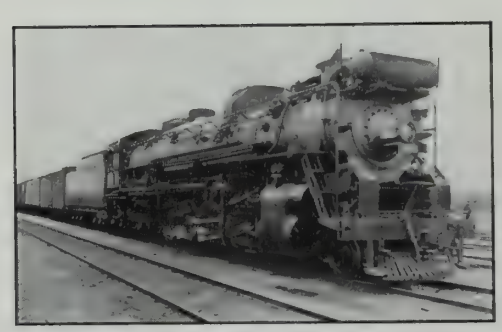
EACH year from 1924 to 1930 fuel performance on the Texas and Pacific has improved with remarkable steadiness. During this period the railroad has placed 70 Lima Super-Power Locomotives in service.

That these engines have been an enormous factor in making new fuel performance records is shown by the above chart. Starting in 1924 at 140 pounds of coal per 1000 gross ton miles, a saving of 35% has been effected.

In February 1930 the Texas and Pacific headed all Class 1 Railroads in the United States with a fuel performance of 91 pounds of coal per 1000 gross ton miles.

The last report of the Inspection Division of the Interstate Commerce Commission also placed Texas and Pacific power at the top of the list as having the fewest mechanical defects.

Replacing obsolete engines by Super-Power is the sure way to better fuel performance and operating economy.



Engine No. 663, one of the Texas Type Locomotives built by LIMA for the Texas and Pacific.

*Actual oil consumption is equated to coal.

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LIMA, OHIO

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—Atlantic Foto

The Atlantic City Auditorium, Showing the Exhibits of the Railway Supply Manufacturers' Association. Note the Beautiful Lighting Effects, also the Cement Floors Which Added Years to the Railway Supplymen's Feet.

Conventions Do Pay, He Says

Value of Future Meetings Rests With Members, Chairman McManamy Tells Atlantic City Gathering

By Harold A. Smith

The Hon. Frank McManamy, chairman of the Interstate Commerce Commission, in addressing the convention of the American Railway Association held in Atlantic City during June, said:

"This is a wonderful convention. Wednesday morning I came into this auditorium with one of the past presidents of this association, and a prominent journalist. When we reached the exhibition hall and saw the magnificent collection of railway appliances assembled there, I was asked this question: 'Does it pay?' My reply was that I had reached a decision on that point 11 years ago when it became my duty to determine for the United States Railroad Administration whether or not a meeting of this association should be held during the period of federal control. I decided then that it did pay, and I have had no occasion since to change my mind.

"The potential value is here. Its actual development depends on you. You will get out of it just what you put into it. If you come here solely for a good time, it will not pay either you or your company. If you take advantage of the opportunities here afforded to improve your knowledge of railway appliances and methods it will return substantial dividends to both."

Now that another great convention of the mechanical division has been concluded we realize more forcefully than ever that the above remarks are correct. There is no question. Of course it pays. If you could have followed each day the addresses made, felt the inspiration that each speaker gave to his audience, listened to the committee reports, the discussions of the same and the serious argumentative way the details were discussed, not by the members for their individual glorification but to advance American railroad standards, you would not doubt it.

Some of the most interesting high lights of the 1930 convention and the

The Franklin Highway Guardians Might be the Title for This One Showing Walter H. Coyle, Herman F. Ball and Jack Randolph of "Booster Fame" on Their Way to the Convention. Left to Right: Walter H. Coyle, Herman F. Ball, Jack Randolph.

most discussed ones were the attendance, the new auditorium, the advancement and future of the steam locomotive and the draft gear tests. Because of recent business conditions many were the prophets who knew this convention would be a flop—railroad men were not coming, etc., but what actually happened was the largest attendance of railroad men in history. Up to Tuesday afternoon the total registration was 7,463 as compared with 7,750 in 1928, but the registration in the Mechanical, Purchases & Stores and Motor Transport divisions showed an increase of 109. The decrease was in the registration of ladies, there being 304 less in attendance than in 1928.

The question which popped up on every side was, How do you like the new convention hall? accompanied usually by the negative nod. It is a question, however, that is rather useless to discuss. The growth of both the convention and the exhibits required larger facilities. The new auditorium, the largest in the world, costing $15,000,000 and occupying seven acres of ground, ideally meets the situation. And here we pause to give our readers a few more figures on this great structure. It is 675 feet long and 351 feet wide. The main chamber seats 41,000 people and 66,000 can be seated in the entire building. The Madison Square Garden in New York could be placed in the main auditorium and several other large gatherings be held concurrently in the remaining area. The stage is 165 feet wide and 85 feet deep, while the trusses supporting the main ceiling are 135 feet above the main floor level. The engineer may be interested to know that in the construction of the building 12,000 tons of structural steel, 18,000 tons of reinforced steel, 42,000 cubic yards of concrete and 4,000,000 feet of electric wiring were used.

What the headshakers objected to was not the building or its construction. It was the changed atmosphere. The old pier carried with it a seashore holiday, goodfellowship air that is largely urbanized. The ladies found little in the auditorium to attract or hold them. In the old days they made the pier headquarters. The concerts in the entrance hall formed a gathering point where they became acquainted, and the men in turn widened their acquaintances and found relief from the details of their work. Many pleasant friendships were developed on the old pier that carried back into the business world a better understanding and spirit of cooperation.

The new setting while justified by necessity will with time change entirely the character of these conventions. The exhibits will be there. The railroad men will inspect and study them, but the contacts will become more formal. The "Bill" and "Dick" will disappear and in its stead will come the pardon me Mr. Blank but if you have a moment to spare I would like to show you, etc. Will this be just what you want Mr. Railroad Man? Is this to the best interests of the Commercial Ambassadors? That's for you both to determine. By all means modernize your roads and your equipment but don't modernize your relationships or permit a change to develop that will affect the cooperative spirit that has done so much to build up the mechanical departments of our roads and their equipment.

Samuel M. Vauclain, in his address before the convention on June 24, said: "I want to try to bring before the members of this association some realization of the glorious association to which they now belong, a time-honored institution, an institution that has greater value to the railways of the entire world than any other thing that has happened since its inception." In reviewing further the history of the master mechanics association since its organization in Cleveland in 1868 he showed how much the spirit of cooperation had existed in the organization and what it had meant in the development of our modern locomotives.

Speaking of the future of the steam locomotive Mr. McManamy said:

"We hear much about the probable future of the railroads and the possibility or even probability of the traffic being largely diverted to other means of transportation. It is always dangerous to attempt to forecast the future, but I see nothing in the present situation that threatens the future supremacy of the railroads in the transportation field. For at least 75 years the railroads had no effective competition. Within the past few years competition within certain limits has developed, but I see in that no occasion for alarm, particularly when that same competition is providing the railroads annually with more than one million carloads of high class traffic which otherwise would not exist, and which is also relieving the railroads of many classes of service which they formerly performed at a loss.

"I have an abiding faith in the ability of the railroads as at present managed to meet any competitive situation which may arise providing they do not spend too much of the

money that is earned on the rails in acquiring and developing other means of transportation to handle traffic which can be more economically, efficiently and satisfactorily handled by rail.

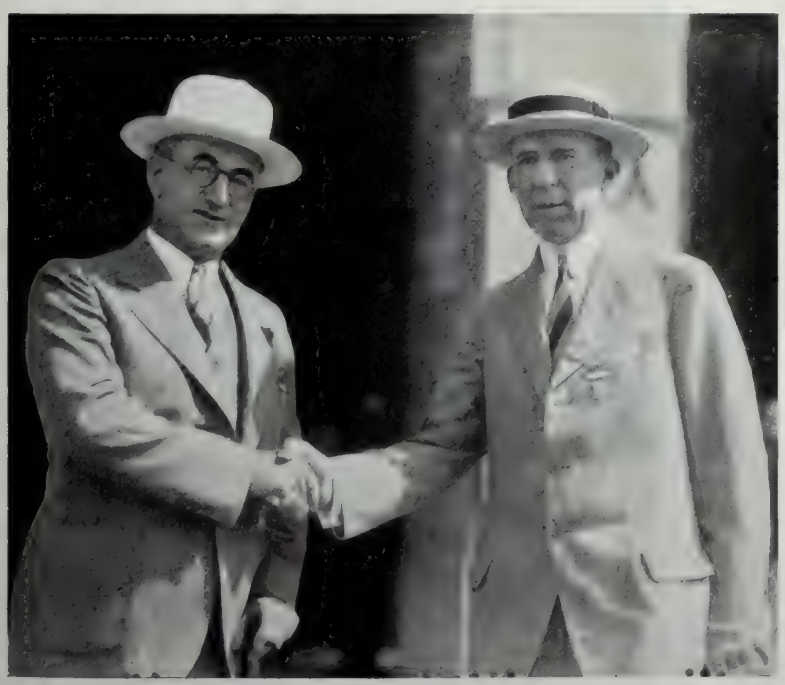
"Like John Paul Jones, the railroads have not yet begun to fight. When they do they will get their share of the traffic, and the public will get service of a character which is now not even dreamed of. I can, perhaps, use the steam locomotive to illustrate what I mean. Every few years some enthusiastic advocate of some other means of generating power appears with a large bouquet of lilies to place on the bier of the steam locomotive. It is but fair to say that there have been wonderful developments along those lines, but in the meantime the steam locomotive, increased in size, power and speed, improved in efficiency and economy continues to depart and arrive on schedule time bearing the burden of the commerce of the country.

"I do not mean that the railroads will be able to drive competition from the transportation field, and they should not. They will meet it with comforts, conveniences and service which for distances of more than 50 miles will be almost irresistible, and the public will be vastly benefited thereby."

Mr. Vauclain in concluding his address had the following to say on the same subject:

"My remarks today, touching as they do the high spots only, would not be complete did I fail to refer to the probable continuance of the steam locomotive on our railways, as well as in other lines of industry where it seems now to be indispensable. We have been for more than 100 years developing this benefactor to mankind. Wherever it has gone it has promoted prosperity and carried civilization into lands at all corners of the earth.

From the Address of Hon. Frank McManamy: "Wednesday Morning I Came into This Auditorium With One of the Past Presidents of This Association, and a Prominent Journalist." Left to Right: Frank McManamy, Harold A. Smith, and D. F. Crawford.



Gilbert E. Ryder, Left, President of the Railway Supply Manufacturers Assn. Congratulating the Newly Elected President, S. G. Down, Right.

"In 1895 locomotive builders and electricians became interested in the designing, development, introduction and consequently the construction of electric locomotives. I had the pleasure of being associated with George Westinghouse when we first joined forces, in that same year to develop electric locomotives for all classes of service. We are not ashamed of our accomplishments in the time that has elapsed. For industrial work this type has superseded all others. The steam dummy is a thing of the past. The electric industrial locomotives, however, are even now giving way to small types of locomotives either directly driven by gasoline or Diesel motors, or indirectly driven by gasoline or Diesel electric devices. The art is progressing rapidly. The perseverance of those engaged in the construction of these machines is highly commendable. The electric road locomotive for heavy railway traffic and high speed passenger service is now a proved success wherever there is sufficient traffic to warrant its introduction. In the very near future we shall have electric operation of railways along the At-

A. C. Deverell Used to Be a Railroad Man But Now He Is Associated with Lee W. Barber (on the Right), Selling the Barber Lateral Motion Device. Mrs. Deverell in the Center.

lantic seaboard extending from Boston to Washington. And as approximately 40 per cent of the population of the United States is east of the Allegheny Mountains I can see no reason why such electric operation would not be more economical and satisfactory than when operated by steam motive power. There is an even greater desire for the elimination of smoke and dirt in our congested centers, especially here in the East, and regardless of the expense to which our railroads may be put, electrification must eventually be installed. And if these large centers through which the railroads pass must be electrified, there is no reason why electric locomotives should not be coupled up to all trains, operated continuously, and without change of engines at any point.

"The development of the Diesel locomotive is having the attention of engineers and railway officials throughout the world, and it is progressing well. There is one great handicap to a more general introduction of this class of power, namely, the great expense involved. While all locomotive builders are vitally interested in the progress of this type of locomotive, some of our railroads are also indulging in the experience of developing these engines, which I am sure in the course of time will come into general use for many purposes.

"But notwithstanding all these substitutions for the steam locomotive, it is my judgment that we are just beginning to realize what actually can be done with the steam engine in the way of continuous performance, economical performance, and reduction in maintenance that will continue it in service, so that it can be more ably discussed in the year 1980 than it will be at this convention in 1930. I have not lost interest in this greatest of all human devices, and will continue in future as in the past to be its advocate and builder."

Mr. Aishton in his address before the convention had this to say about the draft gear:

"I don't know anything about the technique of your business. I would have to be introduced to a draft gear to know what it is. Anyway, I would not know about all the details, but, in connection with modern locomotives and modern trains, I know you have given attention to the matter of draft gears. You have made tests at Purdue University and prepared specifications, but nevertheless, in my judgment, equally important with this power-brake investigation is a continued detailed intelligent study of this problem of draft gears, and I believe that on the solution of those two problems will depend very largely the future economies you are going to bring about."

J. W. Chandler and J. C. Chapple Were on Hand to Prove that Economy Arches are "More Than Just a Brick." Left: J. W. Chandler. Right: J. C. Chapple.

There are several interesting phases to this statement. Mr. Aishton seems to be the first man whom we have ever heard at a convention admit that he would have to be introduced to a draft gear to know what it is. The majority seem to think that they know everything there is to know about a draft gear and that the problem has now been quite thoroughly settled by the Purdue tests and that all you need now to insure your road draft gear protection is to buy a gear with a laboratory label. Yet Mr. Aishton says: "You have made tests at Purdue University and prepared specifications, but nevertheless in my judgment, equally important with this power-brake investigation is a continued detailed intelligent study of this problem of draft gears."

We wonder if in this reference we don't see the suggestion that only the first step has been taken and that to completely round out the subject the laboratory tests should be followed by exhaustive road tests, as has been done with the power-brake so as to secure data more closely approximating actual operating conditions.

There is no question of the value of the Purdue tests to the industry. This is further attested by the new interest developing in the subject, by the great number of changes made in gears during the past year, by the many new and radical types shown for the first time at this convention, but it's all only a start.

Papers were presented by committees on the following subjects nearly all of which developed good discussion:

Lubrication of cars; prices for labor and materials; rebuilt cars; loading rules; tank cars; brakes and brake equipment; wheels; car construction; safety appliances; couplers and draft gears; specifications and tests for materials; joint committee on reclamation; automotive rolling stock; locomotive and car lighting; lubrication for locomotives; locomotive design and construction; electric rolling stock; railway sanitation; design of shops and engine terminals.

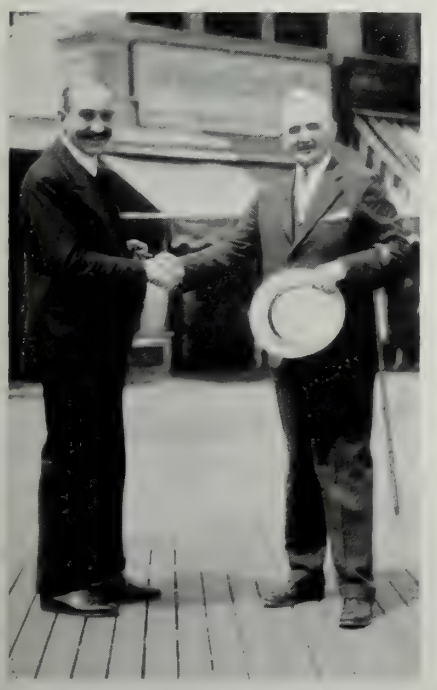
Addresses were made by R. H. Aishton, G. E. Smart, Gilbert E.

It's Serious Business Selling Stokers As You Can Tell by This Picture of Frank P. Roesch and Henry S. Mann of the Standard Stoker Co. Left: Frank P. Roesch. Right: Henry S. Mann.

Ryder, W. P. Borland, M. J. Gormley, Hon. Frank McManamy, Samuel M. Vauclain and A. G. Pack. An individual paper on "The Freight Car Inspection Pit" was presented by R. L. Kleine of the Pennsylvania, and H. A. Johnson, director of research, A.R.A., rendered an illustrated report on the progress of the power-brake tests.

In the last day's session A. R. Ayers, general manager of the New York, Chicago & St. Louis, was elected chairman of Division V, Mechanical. O. S. Jackson was elected vice chairman. Mr. Jackson is general superintendent of motive power and machinery of the Union Pacific System.

The officers of the Railway Supply Manufacturers Association are to be especially complimented this year on the wonderful work which they did in preparing and running the exhibits and the new and novel forms of entertainment produced. The work entailed probably a much heavier burden than heretofore because of the complete readjustment of working conditions, exhibits, equipment, etc. We would like to tell in detail of many of the interesting entertainments, decorative features, the track exhibits, etc., but our space is limited so probably the best we can do is to quote the words of Mr. McManamy:



Commandant H. C. Dardelet of the French Army, Devised the "Dardelet Threadlock" As a Means of Preventing the Unscrewing of Detonation Caps on French Army Shells. L. C. Sprague, Executive Vice President of the Dardelet Threadlock Corpn., Is Shown on the Right.

"I will now say a word with respect to the Railway Supply Manufacturers' Association which has done so much to make this meeting both pleasant and profitable to you. The more or less temporary business depression may be affecting the membership of the Supply Manufacturers' Association, but they are not taking it lying down. The magnificent display of railway appliances which they have brought here in part at least for your benefit can be equalled nowhere else on earth, and whether or not you agree with them as to the merits of their various devices, I am sure you will agree that their spirit is worthy of emulation by other industries.

R. L. Ettinger, Asst. to the Vice President of the Southern Ry. Telling A. J. Davis, (Left) and F. L. Norton, (Right), How Much Cooler Washington Is in the Summer Than St. Louis. Mr. Norton Looks Like He is Neutral and Glad He Lives in New York.

"Their constant efforts to bring about improvements in railway equipment and supplies has done much toward making it possible for the railroads to make the remarkable record in service, economy and efficiency which have been frequently referred to in this meeting."

Gilbert E. Ryder, vice president of the Superheater Co., was president of the R. S. M. A. and S. G. Down of the Westinghouse Air Brake Co. was vice president. Mr. Down has been elected to succeed Mr. Ryder as president and D. L. Eubank of the Galena Oil Corpn. has been elected vice president.

There Is Nothing Like Bringing Up the Boy Right. We Note a Copy of Transportation in Virgil Frantz's Hand. Of Course You All Know James Frantz on the Right Whose Graham White Sanders Are Your Rainy-Day Surety Against Power Losses.

Report on Draft Gears

The subcommittee on draft gears submitted tentative specifications, last year, for draft gears for freight service. These specifications were included in the yearly report to the association and printed in the proceedings of 1929. This subcommittee, through its chairman, H. W. Faus, reported:

Following the annual convention last year these tentative specifications were submitted to the manufacturers for criticism. Replies were received from all manufacturers and careful consideration was given to all criticisms and suggestions offered.

Revised specifications were then prepared and these also were submitted to all manufacturers. Later a joint conference was held with the main committee and the representatives of the manufacturers, at which all differences of opinion were frankly discussed.

Briefly stated, the proposal is to limit any future applications of freight car draft gears to A.R.A. approved types. Any manufacturers may submit one or more types for approval. Tests will be made at the expense of the manufacturer under the supervision of your subcommittee in the A.R.A. laboratory at Purdue University. A certificate of approval will be issued for each type of gear which meets the requirements of the specifications. These certificates will be good as long as no change is made in either the design or material of the gear, or in the specifications.

It should be understood that no obstacles will be placed in the way of development of new and improved types of draft gear. In Section 1 of the proposed specifications it is specifically stated that they cover draft gears for freight cars and locomotives "having the A.R.A. standard pocket."

In order that the purchaser of ap-

Elliptical Springs are Reclaimed at Springfield, Mo., by the Frisco for Further Service.

proved draft gears may be able to ascertain for himself that gears furnished are up to standard, secondary specifications have been prepared which are designated as Purchase Specifications for Approved Draft Gears for Freight Service.

These purchase specifications provide for abbreviated tests to be made under either the 9,000 or 27,000-lb. drop hammer. They may be made at the manufacturers' own laboratory or that of the railroad, as may be agreed between the manufacturer and the purchaser.

It has been found that the material used by most railroads for draft gear follower plates is low carbon steel or wrought iron. Such material is too soft for this purpose, especially when used with certain types of draft gear which utilize the followers to provide part of the friction capacity.

Therefore, it is recommended that when separate followers are used with friction draft gears they shall be made from carbon steel and conform to the chemical and physical requirements of the A.R.A. specifications for axles, shafts and other forgings, Class A unannealed (Manual, Section A, pages 7 to 10, 1926). The size of the followers shall be 12½", plus or minus ⅛". by 8⅞", plus or minus ⅛", by 2¼", plus or minus 1/32".

It is further recommended that shearing of followers be not permitted. They shall be smooth forged or sawed.

Division VI Attendance Lower This Year

The opening session of Division VI, Purchases & Stores, A.R.A., was called to order in the eleventh yearly meeting at Atlantic City, June 18, by William Davidson, chairman, general storekeeper of the Illinois Central Railroad. The attendance was not up to the average of this important organization, but the 400 members and guests who did appear used all the available space, so perhaps it was just as well, remembering the weather, that more did not show up.

Charles E. Denney, president of the Erie Railroad; R. H. Aishton, president of the American Railway Association, and the chairman, Mr. Davidson, were the speakers. Following their addresses the remainder of the day was given over to committee reports.

In the third, and last day's session, Friday, June 20, C. E. Walsh, purchasing agent of the Pennsylvania Railroad, was chosen chairman for the ensuing year, with L. C. Thomson, manager of stores, Canadian National Railways, as vice chairman. The general committee elected for a two-year term consists of these members: F. S. Austin, purchasing agent, Boston & Albany; J. L. Bennett, purchasing agent, Central of Georgia; G. W. Bichlmeier, general purchasing agent, Union Pacific System; L. P. Krampf, supply agent, Missouri Pacific; W. M. Davidson, general storekeeper, Illinois Central; E. F. Hasbrook, assistant purchasing agent, Chicago, Burlington & Quincy; and J. E. Mahaney, general supervisor of stores, Chesapeake & Ohio and Pere Marquette. In addition, a committee on nominations was elected as follows: E. A. Clifford, general purchasing agent, Chicago & North Western; L. P. Krampf, supply agent, Missouri Pacific; W. S. Morehead, assistant general storekeeper, Illinois Central; H. T. Shanks, purchasing agent, Louisville & Nashville, and A. L. Sorensen, manager of stores, Erie.

Mr. Denney said, in his address at the opening session, that he believed railroads would remain for many years, as they are now, the country's most dependable form of transportation. "These railroads are a big factor in maintaining the country's prosperity," Mr. Denney declared. "Expenditures made by them for supplies of all kinds enter into almost every industry. The rail carriers in 1929, for instance, spent $1,329,535,000 for fuel, materials and supplies alone. This amount, however, does not include purchases made indirectly by the railroads of many commodities, large quantities of which go into railway equipment and new construction that is contracted for under lump-sum agreements and is not classified under the head of direct purchases.

"While railway purchases in 1929 exceeded by $58,194,000 or nearly five per cent those made in 1928, they fell below the totals for earlier years from 1923 to 1927. This reduction was in part due to greater efficiency and economy in the use of materials by the rail carriers, a gradual decline in railway inventories of materials and supplies on hand, and lower price levels of certain of the commodities purchased.

"Not only has the speeding up of the movement of freight been of distinct advantage to the shippers of this country, but the railroads themselves have also benefited for it has enabled them to operate successfully with reduced inventories."

Through the reclamation of old materials, according to a report submitted by the committee on recovery, repairs and reclamation, substantial savings are being realized and large quantities of material which formerly went into the scrap heap after serving the purpose for which it was originally designed, is now either being repaired or converted into other uses.

"We are being constantly urged by our executive officers and by the officers of this association," said the committee report, "to assist in the reduction of operating expenses on our railroads. This committee has given the subject of reclamation and recovery of material careful study as it is one of the important ways in which a railroad may reduce its purchases and operating expenses. We hope that by the study of this report, all roads will be able to find something in it that can be adopted and which will aid in the more economical and efficient operation of the railroads of this country."

The committee submitted a list of nearly 300 ways in which old rails,

locomotive parts, tools of different kinds, car wheels, springs, bolts, and hundreds of other articles which have worn out their original usefulness, can be reclaimed and again placed into service. In addition, methods have also been devised for the reclaiming of oil, packing and waste at moderate cost. On many of the roads, the reclamation of material is a highly organized industry in charge of a general reclamation committee which, with divisional committees, watches every opportunity to bring about savings through the reclaiming of materials.

Electrical Engineers There Also

Some of the really important things of this world are done quietly and unostentatiously. Witness, for instance, the semi-yearly meeting of the Association of Railway Electrical Engineers. This organization's president, J. C. McElree, electrical engineer for the Missouri Pacific Railway, called the members to order Monday morning, June 16, at the Hotel Dennis, Atlantic City. The reading of reports proceeded immediately without anyone making a speech, a novelty which, in the opinion of a reporter, entitled the association to the custody, during 1931, of the self-heating waffle-iron, awarded for outstanding merit in the interest of progress.

There were ten reports, the first of the lot being that on train lighting. Others were, locomotive electrical equipment; purchasing electrical energy; electric welding and heating; welding equipment; illumination; automotive railway equipment; power plants; motors and control. All the reports will appear in full in the regular yearly report. As might be expected in a meeting of men assigned to subjects so highly technical, the closest attention was given every report, the discussion was brief and pointed, and no time was wasted. The regular yearly meeting of the association is to be held in October in Chicago.

Motor Transport Division Has Problems

The Motor Transport Division of the American Railway Association was organized four years ago at Atlantic City. More than 60 railways were represented in this year's convention, presided over by A. P. Russell, executive vice president of the New Haven System. R. H. Aishton, president of the A.R.A., spoke at the opening session, emphasizing the extremely important tasks confronting the division in trying to coordinate steam railway and highway service, and in influencing proper federal legislation to regulate highway carriers.

Switch Points and Frogs to be Reclaimed are Stored Here Until Needed by the Frisco System at Springfield, Mo.

Mr. Russell presented the report of the general committee, and announced the resignation of R. L. Fairbairn of the Canadian National, chairman of the rail motor car section, and of T. B. Wilson of the Southern Pacific, a member of the committee. E. Wanamaker, electrical engineer for the Rock Island Lines, was appointed to Mr. Fairbairn's place, and C. R. Harding, assistant to the President of the Southern Pacific, to Mr. Wilson's position. Chicago was selected for the next meeting place and November 18-20 as the dates.

R. N. Van Doren, C. & N. W. Ry., chairman of the law committee, presented a report describing progress at Washington in the consideration of the Parker bill to regulate interstate motor coach lines. Mr. Wanamaker read a paper for the rail motor car section on "The Probable Rail Motor Equipment of the Future;" W. F. Collins, automotive engineer for the New York Central Lines, read a report on "Organization for Maintenance and Supervision of Rail Motor Cars," and a report on "The Future Needs in Rail Motor Car Development" was presented by F. Hartenstein, assistant to the general manager of the Lehigh Valley. Other reports received were from the committee of the motor coach section of which P. J. Neff is chairman. A paper on "New Methods in Train Heating" was read by S. M. Sovocool of the Peter Smith Heating Co., and one by A. H. Candee, railway engineer for the Westinghouse Electric & Mfg. Co., on "Torque Control for Internal Combustion Engines."

In the second day's session R. K. Stackhouse, general superintendent of stations and transfers, Pennsylvania Railroad, spoke on truck competition. "As to what should be done to meet motor truck competition," said Mr. Stackhouse, "it is felt this feature divides itself into two phases: First, expeditious movement of traffic by railways, and, second, what may be done in highway motor trucking.

"The effect of motor trucks on railway movement is shown by the fact that in 1920, Class I steam railways handled 89,901,495 tons of less than carload lot freight; in 1926, it had dropped to 68,296,686 tons, a decrease of 24.03 per cent. In 1928 it had further declined to 63,260,249 tons, a decrease of 29.7 per cent from 1920. The motor truck has been a potent factor in less than carload lot freight haulage, and each railroad has no doubt determined the extent to which this feature affects its revenues.

"The number of trucks registered in the United States and of the end of each year indicated, represents a barometer of motor truck progress. At the end of 1920, there were 1,006,082 trucks registered while on the same day in 1925, there were 2,441,709, an increase of 143 per cent over 1920. On the last day of 1929,

Reclamation Plant for Axle Box Packing Used by the Frisco at Springfield, Mo.

there were registered in the United States, 3,379,854 motor trucks, an increase of 38 per cent over 1925. Truck production by capacities in 1929, which was a fairly representative year, showed that 93.4 per cent of the total production consisted of trucks of less than two and one-half tons. Trucks of from two and one-half tons and less than five tons amounted to 5.1 per cent, while 1.5 per cent of the total production were trucks of five tons and over.

"A natural indication from these figures would be that the motor truck performs its most valuable service in terminal areas. However, although 93 per cent of the trucks are of less than two and one-half tons capacity, a great deal of comparatively long distance traffic undoubtedly is carried on such trucks. Furthermore, these smaller trucks, when considered in conjunction with the number of large capacity trucks, and the various types of trailers, (including the special trailer for automobile handling), constitute in the aggregate a vast potentiality in the transportation of freight.

"Twenty-two per cent of the receipts of live stock at 16 principal markets in 1929 came by motor truck. At these markets, 13,775,905 cattle, calves, hogs and sheep arrived by motor truck, an increase of 19 per cent over the receipts by truck in 1928. The number of head of cattle received by truck at these points has nearly trebled since 1925. The tonnage shipped by truck since 1925 is estimated at two million tons and total value at 410 million dollars. It is estimated this live stock, if shipped by rail, would have aggregated 152,000 carloads. The average truck haul is fifty miles with a maximum of three hundred miles.

"Reports also show the extensive use that is made of motor trucks for the shipment of fresh fruits and vegetables from points in southern Indiana and southern Illinois, from western New York and the Cumberland-Shenandoah sections and eastern Maryland, Delaware, and the eastern shore of Virginia.

"It is hoped," continued Mr. Stackhouse, "that this information will give the membership of the division some interesting information regarding the utilization of motor trucks in the transportation of freight, and enable the formulation of sound policies to insure the most economical and efficient service. With a proper understanding of the ability of each form of transportation, there is reason to believe that the railroads and the motor trucks may be properly correlated into a whole picture for transportation service to the public."

Brower Heads Superintendents

C. E. Brower, general superintendent of transportation, A. B. & C. Ry., Atlanta, Ga., was elected president of the American Association of Railroad Superintendents in the closing session of that organization at Minneapolis, June 19. Others elected were: First vice president, F. O. Whiteman, assistant general superintendent, C. S. S. & S. B., Michigan City, Ind.; second vice president, C. Forrester, general superintendent, Canadian National Rys., Saskatoon; third vice president, Victor Parvin, general manager, A. A., Toledo; fourth vice president, F. O. Coleman, superintendent, M. & St. L., Oskaloosa, Iowa; secretary-treasurer, J. Rothschild, St. Louis, re-elected. Chairman, executive committee, M. L. Hayes, assistant general superintendent of transportation, Missouri Pacific, St. Louis. E. H. Harman, Jr., served as acting secretary in the absence of Mr. Rothschild, who has been ill for several months.

The secretary's report showed the total membership to be 2,317, of which number 334 were received during the year. The registration at the convention was about 250 for the three days. Eight committee reports were read and there were addresses by W. H. Bremner, receiver, M. & St. L. R.R.; H. G. Taylor, manager, public relations department, A.R.A., Washington; E. F. Flynn, assistant to vice president and general counsel, Great Northern, and E. H. McGovern, division engineer, Big Four, Mattoon, Ill.

Carl Gray, Jr., vice president and general manager, Chicago, St. Paul, Minneapolis & Omaha, was toastmaster at the yearly dinner, Tuesday evening, June 17, and presented the mayor of Minneapolis, W. F. Kunze. J. J. Franco, president of the association, general superintendent of transportation of the National Railways of Mexico, presided at all the sessions. Mr. Franco was accompanied by 25 operating officers of his line and of the Mexican Railway.

It Was Just An Error

The Hoch-Smith Resolution directed the Interstate Commerce Commission to help agricultural interests with lower rates if the commission found it could be done. The commission chose to aid California fruit growers. It ordered a cut in rates which the roads said was confiscatory. Some of these fruit-carrying roads are highly prosperous, and doubtless the commission felt they could stand the cut. The court declared the commission had misinterpreted the resolution, which did not actually create a new rule in ratemaking, but merely expressed a hope of lower rates, says the St. Louis Star.

There are two sides to the rate question. The public wants the lowest rates it can get consistent with good service. A rate may look too high in prosperous years. In a time of business depression that same rate looks too low for the railroads, while the public thinks it is paying too much for hard times.

—P & A Photo.

Delegates to the A. E. R. A. Disport Themselves on San Francisco's Newly Finished Beach Below the Famous Cliff House.

Millions to Overcome Congestion

Convention in San Francisco Declares the Electric Railway Industry Faces Chaos in Cities. National Educational Drive Planned

By C. W. Geiger

ELECTRIC railways and street car lines all over the country are suffering so seriously as the result of congestion, called the "blight of American cities," that the industry's big convention at San Francisco, last month, decided to spend about 400 million dollars in a national drive to bring order out of chaos. A million dollars a day will go toward modernization of equipment, relief from congestion, and adjustment of unfair taxation.

This, in brief, is the forthcoming year's work for the committees of the American Electric Railway Association as it was described in the 49th yearly convention June 23-26 at San Francisco. The leaders in the movement are to be John H. Hanna, Washington, D. C., newly elected president of the association; J. N. Shanahan, Omaha, chairman of the advisory council, and Charles Gordon, managing director, New York.

Approximately ten million dollars will be spent for advertising to create better understanding of transportation problems. The outstanding part of the drive, however, will be to enlist business men and property owner organizations in a cooperative move to speed up traffic.

Various leaders of the industry, including Paul Shoup, retiring president of the association, declared the general welfare of communities as well as that of the industry demanded the cooperation sought. Surface rail and bus lines of the United States, 80 percent of which the association controls, urgently need relief that business and civic organizations can compel, they declare. Primarily, it was insisted, public transportation is being paralyzed in most communities by unnecessary traffic congestion. Archaic franchises are hamstringing companies financially. Private motor car competition brings operators more grief. However, the managements say they are willing to buck competi-

tion if relieved of the other situations.

Concrete suggestions for affording relief include systematic traffic management and release from unfair taxation. Traffic control similar to that now in force in Chicago, and modern franchises like that of Youngstown, Ohio, would satisfy most managements, it was said. Such notable progress has been made by the Youngstown Municipal Railway under its new franchise that the association at the San Francisco convention awarded the company the highest honors for transportation achievement in the United States during 1929. This honor carried with it the Charles A. Coffin gold medal and $1,000 award given by the General Electric Company.

Youngstown car riders, it was said, virtually wrote the franchise. Leading citizens, realizing the company could not continue to give them high class service under its old permit, called public meetings of all citizens and worked out a franchise which would be fair to both the company and the public. Primarily, the franchise keeps fares down to the actual cost of operation, but guarantees a fair return to investors in the property. Included in the charges from which the company is relieved under the new franchise are cost

Guy E. Richardson,
First Vice Pres. A. E. R. A.

of paving, street sweeping, snow removal and the administration of local transportation regulation by the city. The award was given to the company at a banquet of the advisory council, J. N. Shanahan, chairman of the council, presiding, and Paul Shoup acting as toastmaster.

Included in the speakers at the opening session at the convention June 23, were Mayor James Rolph, Jr.; Paul Shoup, president of the association for 1929; D. W. Pontius, president of the Pacific Electric Railway Co., Los Angeles; Samuel Kahn, president, Market Street Railway, San Francisco, and Charles Gordon, managing director of the American Electric Railway Association.

"The average citizen," Mr. Shoup said, "travels about only with the greatest difficulty, and with an appalling waste of time regardless of what transportation agency he may use. Transportation facilities in most cities have been permitted to fall far behind the standards for other elements in modern urban life. Inconvenience, crowding and dangers encountered in riding, driving or walking in congested traffic areas have come to be accepted as almost inevitable. That should not be so."

The street car seeks the right-of-way by virtue of an overwhelming majority of passengers in the street, said Samuel Kahn, of San Francisco. "But how often do we see a hundred passengers on a street car delayed by a chauffeur and a lap-dog in a limousine, or some similar hundred-to-one situation?" D. W. Pontius spoke on "Revenue Prospects of Electric Interurban Transportation."

The subject of the day for the second session was "The Indus-

S. H. Anderson, Superintendent of Motive Power and Equipment for the Pacific Electric Railway at Los Angeles, Contributes This Photograph Showing Delegates Who Attended the Convention of the A. E. R. A. at San Francisco Fifteen Years Ago.

try's Effort to Help." Dr. Thomas Conway, Jr., president of the Cincinnati & Lake Erie Railroad, spoke on "Progress in Meeting the Industry's Equipment Problem."

Dr. Conway said that interested firms of the electric railway industry have subscribed substantially all of a $500,000 fund to be used in expediting the development of the urban railway car. Dr. Conway, as chairman of the presidents' conference, has made a study of this problem, and has prepared a memorandum outlining a plan of procedure to achieve the desired end. It was gratifying, he said, to know that the need for some such effort was admitted by every interest approached.

The presidents' conference is not a committee of the American Electric Railway Association. Its activities are conducted outside of that body although they have the approval of the advisory council and of the executive committee. The secretary of the committee is Charles Gordon and its treasurer Barron Collier.

Dr. Conway announced the unanimous selection of C. F. Hirschfeld of Detroit, for many years head of the research department of the Detroit Edison Company, to be the committee's chief engineer. Not a railway car specialist, Hirschfeld nevertheless will be charged with developing the "perfect" street car. Comment by delegates developed the fact, though, that there is wide divergence of opinion relative to exactly what may be the perfect car. It is agreed that it must have better braking and accelerating capabilities, high running speed, noiseless operation and comfortable passenger accommodations. It will be considerably lighter, and consequently have more power per pound of weight.

Blank & Stoller.

John H. Hanna, Elected President of the A. E. R. A.

"Most of all," said Dr. Conway, "It must be good looking. No one yet has evolved a railway car possessing that elusive quality called 'it,' which has been such a tremendous factor in the phenomenal success of certain makes of automobiles."

One delegate said there is a feeling that the self-contained gear unit is the coming drive for street cars.

Other speakers during the second session were G. A. Richardson, vice president and general manager of Chicago Surface Lines, who spoke on "Street Traffic Economics"; J. N. Shanahan, president, Omaha & Council Bluffs Street Railway Co., "The Man on the Platform—Our Greatest Potential Asset"; Edward Dana, general manager, Boston Elevated Railway, "Conference Training, Its Technique and Possibilities."

"Where an industry is faced with actual and effective competition, governmental authority should consider that fact in its regulatory efforts," declared John E. Curtis, chairman of the Nebraska state railway commission, speaking on the subject of "Public

At the Right of the Light Pole We Discover Paul Shoup in the Group of Delegates. How Many Familiar Faces Can You Find Here? Doubtless Quite a Number You Expected to See Are Not Here. Some Have Gone Into Other Businesses, Some, Alas, Have Gone Home.

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Responsibility in Regulating a Competitive Industry."

H. G. Taylor, manager public relations, car service division, American Railway Association, Washington, spoke on "Transportation, a Community Problem."

A special committee headed by J. B. Stewart, Jr., general manager of Cincinnati Street Railways Co., began a study of the advisability of coordinating taxicab service with street car operation.

F. W. Doolittle, vice president of the North American Co. of New York, declared there is a necessity for taxi service, and that street railway companies must be made to realize it.

"Interesting the Customer" was the subject selected for "The Trainmen's Conference Demonstration," given by the employes of the Market Street Railway under the leadership of T. A. Bragg.

Only one passenger out of every 300 million who rode the electric railways of the United States last year was fatally injured, according to official figures. This marks a new record for accident prevention on electric lines. During 1928 one passenger out of every 260 million carried was fatally hurt. The total passengers carried last year exceeded 15 billion and fatalities were about fifty.

The three Anthony N. Brady medals awarded yearly to the three transportation companies making the best accident prevention record in the United States and Canada were won by the Duluth, Minn., Street Railway Co., the Colorado Springs, Colo., Interurban Railway and the Municipal Street Railway, Lethbridge, Canada. The Duluth company had only 0.42 fatalities per 1,000,000 miles of operation. Operating 111 cars over 5,461,671 miles during the year, it had only two fatal accidents. Its injuries of all kinds totaled only two and one-half per 100,000 miles. The Colorado Springs Company had no fatalities. Its injuries were only 0.30 per 100,000 miles. The Lethbridge company had neither fatalities nor injuries during the year.

M. D. Lack, tax counselor, California Tax Payers' Association, Los Angeles, in his talk on "Taxation" advocated a tax for electric railways which would take into consideration gross income and earnings. Mr. Lack said the value of property alone is not a measure of the total worth of a corporation; neither is it a scientific basis for corporate taxation. Earning power necessarily is such an important element that no system failing to take that factor liberally into account ever can bring about even substantial equality of the tax burden.

Speaking of new equipment projects referred to in connection with the proposed expenditures in the next year, Charles Gordon, managing director for the association, said the Cincinnati & Lake Erie has decided to build 25 new cars which will be capable of making 82 miles an hour, and will operate on a scheduled speed of 75 miles an hour between Cincinnati and Toledo. The Los Angeles Railway Co. was listed as ordering three new sample cars in preparation for a quantity purchase; Detroit already has placed orders for 100 new cars; Baltimore is getting 250 new street railway cars. Samuel Kahn, president of the Market Street Railway Company, said his company would build 26 cars in the next year.

The electric traction speed contest award went to the Chicago, South Shore & South Bend Railway for maintaining an average speed of 45.6 miles an hour between terminals over its 90-mile system.

Resolutions presented by a committee headed by Frank Coates, past president, declared: "Looking back on the work of the convention some of us now confess shame for the fears we entertained that business depression and the state of our industry would militate against the success of a convention on the Pacific Coast. It has been a pronounced and unmistakable success." About 1500 persons were registered.

A special luncheon Thursday, June 26, was the closing event of the convention so far as San Francisco was concerned. The next meeting, it was announced, will be in Atlantic City, N. J., Sept. 28-Oct. 2.

Fredrick C. J. Dell, director of exhibits, in charge of membership, who acted as master of transportation for this year's convention, said of the Atlantic City convention: "The usual large manufacturers' exhibit, occupying over 100,000 square feet of floor space, exclusive of aisles, will be held in connection with the convention meetings. In addition there will be the usual complete exhibit of various types of street and interurban cars, freight, dump work cars of all kinds, including crane cars and other types. This car exhibit is the fashion show of the electric railway industry. In addition the latest types of de luxe motor coaches occupy about a third of the exhibit floor space, and the car and bus accessory manufacturers occupy the remaining space. The annual conventions, with exhibits, usually draw a registration of 8,000 delegates and guests from all over the world."

An interesting feature of the convention this year was the inspection trips over various properties along the lines of the special trains. The red train stopped for this purpose and made trips over the properties of the St. Louis Public Service Co.; Kansas City Public Service Co.; Salt Lake & Utah Railroad, and the Bamberger Electric Railroad, both at Salt Lake City.

All business sessions, including luncheon conferences, were held at the Hotel Fairmont except the advisory council banquet on Monday night, given at the Palace hotel, and the accountants' and claims luncheons on Tuesday at the Mark Hopkins hotel.

The San Francisco traction companies cooperated in supplying efficient registration facilities, while the women in charge of the registration of delegates were supplied by the San Francisco Tourist and Convention Bureau, Market Street Railway, and the Key System. Delegates whose business engagements permitted went to Los Angeles after the convention adjourned to be entertained by the Pacific Electric, the Los Angeles Street Ry., and public organizations.

A distinguished courtesy was arranged for the newly elected president of the association, Mr. Hanna. This gentleman had been so busy that, obviously, he had to miss all the special entertainments and trips and things began to look a bit blue for him. Mr. Shoup came to the rescue, however, by appointing Garnett King of the S. P. passenger department to take Mr. Hanna about on a personally conducted and specially arranged drive to see things worth seeing.

It is interesting to know that 35 years ago Mr. Hanna was pulling levers and ringing bells on the cable cars of Washington, D. C. He worked himself up from a motorman to the presidency of the Capital Traction Co., and now is president of the A.E.R.A. Other officers advanced in line with the established rule of the association were G. A. Richardson, Chicago, first vice president; J. H. Alexander, Cleveland, second vice president; W. A. Draper, Cincinnati, third vice president, and W. E. Wood, New York, fourth vice president. Charles Gordon, managing director; Barron Collier, treasurer, and Guy C. Hecker, general secretary, all of New York, retained their offices.

The Story of the Street Car

—Wide World Photos

First Berlin Horse Car and a Carriage of the Seventeenth Century Were Seen in the Old Berlin Show in May.

By C. K. Lee

Gen. Engr.

Westinghouse Elec. & Mfg. Co.

THE GENERAL Electric Company, which had been formed the year after the appearance of the Westinghouse No. 3, by the merging of the Edison companies with Thomson-Houston, built in 1893 the "800", a four-pole machine with but two field coils, and offered with either ring or drum armature. Otherwise, it conformed generally to the principles established by the No. 3. Its peculiar name followed a proposal by its builder to name motors by the tractive effort they could exert, instead of by horsepower. Thus, the "800" (25 hp.) was followed by the "1200" of similar design, and by the "1000" and others. Beginning with the "1000", General Electric motors copied the symmetrical four-pole, four-coil field arrangement of the Westinghouse No. 3, and from that day to this the designs of the two companies have been closely similar, the improvements brought out by either company being immediately followed by the other.

A similar transformation took place in the power house. The little belted bi-polar generators with which the industry had begun, the largest of which was scarcely more than 150 Kw., were plainly beginning to get out of their range. Dynamo rooms had long rows of little machines, forests of belts, even with the first multi-polar designs. The big Boston station had thirteen 1000 hp. Corliss engines in 1891 with 26 belts five feet wide, driving tremendous countershafts in the basement, and thence, by 52 30-inch belts, the 52 Thomson-Houston multi-polar generators, each rating 187 Kw. It gives one aching ears to think of the thunder of those 78 great belts; aching legs to think of the incessant trips of the oilers; aching fingers to think of the belt splicing.

The Westinghouse Company, in 1891, announced multi-polar generators with novel features. They were the largest so far, 250 and 500 hp., with 1000 hp. offered. First among large railway generators, they had a circular field frame, a slotted drum armature, a "series" or "wave" winding, saturated armature teeth, and self-excitation. All these novelties soon became standard with all builders.

The belt-drive gradually followed the bi-polar to oblivion. In 1891 several builders began producing generators, direct coupled to engines, among the first being Westinghouse, whose high-speed vertical engine was well suited to such an arrangement. Two years later, at the Chicago World's Fair in 1893, the huge 1500 Kw. engine-type generators shown by the General Electric Co. set a new record in size, and marked the passing of belt-drive.

In the matter of heavy electrification, that fair was memorable. The first electric operation of an elevated road in America was shown on the "Intramural," with trains of a motor car and three trailers seating 280 persons, and driven by 133 hp. motors. (The first permanent, electrically operated elevated road opened that year in Liverpool, England.) There was shown also a 96-ton, 1000 hp. locomotive for the Baltimore tunnel of the B. & O., a development which, going into service two years later, usually is considered the beginning of American steam road electrification.

And now, let us examine this street railway industry of 1894-5 as it ushered in a future which everyone was convinced would be boundless. Electrically, the problem of its infancy were solved. Generators, feeders and overhead had assumed stable and adequtae form. The motors of this year would, some of them, be running 35 years later. In 1894, there were still plenty of little single truck cars, antediluvian survivors of a few

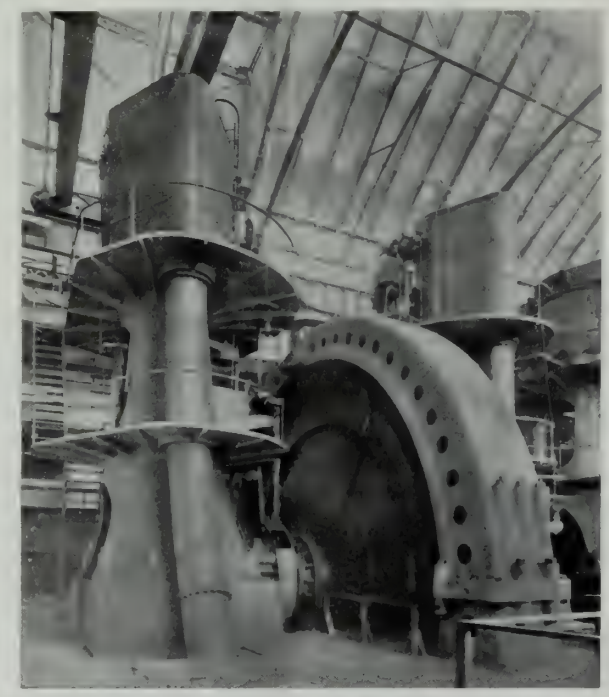
This is the second section of a history of street cars prepared for *Transportation* by Mr. Lee. The first installment appeared last month in connection with the yearly convention of the American Electric Railway Association, held at San Francisco June 23-26. The third and last installment of this history will appear next month.

years previously, and even cars with but a single motor, but long double truck cars were common. One of the first efforts at safety and quick passenger loading had appeared in '91, the Brownell "accelerator" design with extra wide doors placed close to the step, and diagonally opposite corners of the platform closed in. The center entrance and the double deck have likewise begun their periodic appearances. The street car, being by far the fastest vehicle on the street, was much concerned over innumerable designs of fenders. Vestibuled platforms are found here and there, but are not yet general, and the motorman has a good opportunity to keep warm by exercising with the hand brake.

Interurban lines were beginning to attract attention; there were 13 listed in 1894, including one 14-mile horse-car road! (How many readers know that a horse interurban once ran sleeping cars?)

At Niagara, in '95, there was going in that queer new Westinghouse sort of electricity, polyphase alternating current by grace of which in the next decade, interurbans were to spring up by thousands of miles. It seemed clear that elevated roads would soon be run by electricity; the New York Subway, interminably discussed, was drawing near; and electrification of steam railroads seemed just around the corner. Horse cars were vanishing rapidly, and would shortly hold out only in New York City. This metropolis was proudly completing a cable road just as other cities were wondering whether their own were not obsolescent.

The pioneer electrical manufacturers have disappeared or been absorbed; the great figures in the field are now the two companies, Westinghouse and General Electric, which will still hold that position a generation later; though, attracted by the industry's rapid growth, various new companies have ventured in to "take a whirl" and shortly disappear. There is Walker of Cleveland, long a leading figure in cable machinery, who in '94 decides the old game is played out, and appears with electric car equipment and generators. There is Curtis (Jersey City) and the Steel Motor, and Card (Mansfield), and Sperry. Storage battery cars still exist, breathing feebly. Just now, it is the Waddell-Entz Co. which promotes them, as it had been the Julien Co. and others ten years before, and as it will be the Edison Beach Company many years hence. There is still an exaggerated idea in some quarters, of the objections to the trolley wire, and there are, besides the conduit roads, various "button" or "surface-contact" systems, in which the car draws power from buttons in the pavement which are alive only as it passes over them. One of the contact boxes of such a long-forgotten system, dug up in 1924 at East Pittsburgh, puzzled all beholders, save one or two ancients.



A Big Engine Type Generator of 1901, Still the Largest Diameter Engine in the World—43 Feet. This 5000 Kw. Unit Was Built for the New York Elevated Ry.

There is popularly believed to be no limit to what an electric motor can do, if urged, and Terre Haute boasts that one of the little trolley cars with two Westinghouse 12 motors (30 hp. each), recently handled five trailers and 400 passengers.

Very striking to a street car man of 1930 transported backward 35 years, would be the attention to beauty and luxury in the cars. For the electric car was greatly successful not for its cheapness nor durability, nor talent for "mass transportation," but because it was the fastest and the most comfortable way to travel. It was when a still faster and more comfortable conveyance appeared that street railway operators really had cause to worry. In 1895, and for a decade thereafter, wealth and fashion rode the street cars. People rode for pleasure, and gave "trolley-parties" to their friends. Cars, even for regular service, were likely to have panelling of fine woods, plate glass windows, and gold leaf decorations, and the colors were as gay and various as even the taste of 1930 could desire. There were cars of blue, orange, canary, white, green, brown, plum-color, and scarlet. It was not that those old fellows in the days of the trolley's popularity were not acquainted with the durability of dull drabness, but that they realized the popular appeal of bright color.

An anonymous and forgotten worthy of 1890 expressed the idea: "Speed, safety, cheapness, and comfort are of the very highest importance; but of not less importance as a means of creating patronage, is the * * * decoration of cars." Speed, comfort, beauty, the creation of patronage; how curiously that sounds across the gap of 40 years!

And of course, there were the aristocratic breed of private and special cars. One, for example, in 1894, had arm-chairs, upholstery of peacock blue brocade, and silk curtains. Its outside was black, relieved by gold and crimson tracery, and the trucks were painted dark green.

Besides its main business of carrying passengers the trolley-car, as the sole form of mechanical transport in city streets, was given innumerable side-lines, duties now performed by automobiles.

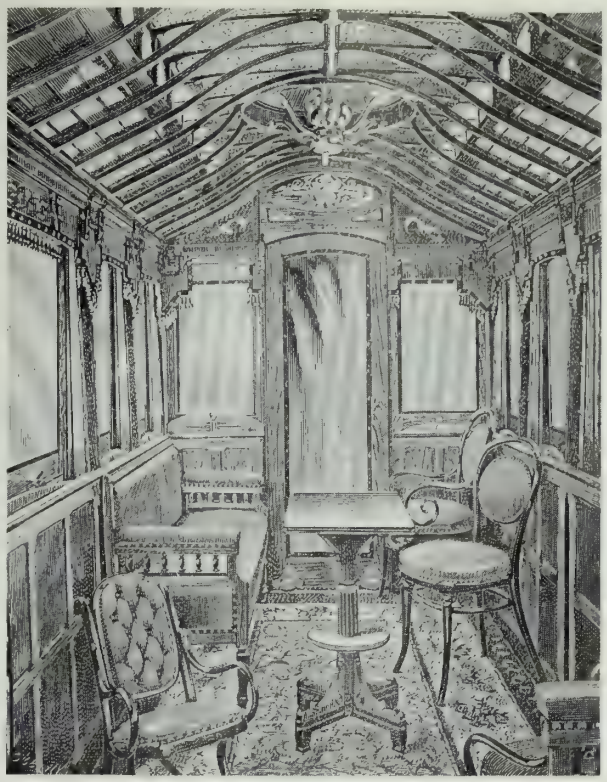
The horse-filled streets needed frequent sprinkling, and many a road operated trolley sprinkler cars. Toronto, for example, paid its street railway 65 cents a mile a day for four daily sprinklings, over 40 miles of street, twenty-six dollars easily earned.

Electric freight haulage sprang up and prospered many years before the appearance of the motor truck. In St. Louis, as early as 1893, specially built trolley postal cars were carrying the United States mail, and even sorting it enroute. Cars fitted up as fire engines were ready to dash forth in some cities. A profitable business in funerals sprang up in some places, the special funeral car with its mortuary black drapes taking the place of both

hearse and procession, swiftly and conveniently. Civic parades by night, whose kerosene - lighted floats formerly had bumped along uncertainly on horse-drawn drays, took on a new splendor and beauty when built on electric flat cars, with access to unlimited electric illuminations.

Five years passed, 1900 came, and the turn of the century! And now began, perhaps, the happiest period of the street car. It still had no competition. First among American rapid transit lines, the Chicago South Side Elevated had electrified in 1897, using the first multiple-unit control, devised by Sprague. New York roads were following suit.

But more conspicuous than any of these perhaps, was the fulfillment of the promise of the alternating current. No longer need expensive steam stations be scattered every few miles all over a system, a transformer, a rotary converter, an idly-watching attendant, and current was available 50 miles or more from the big economical power plant. Niagara power had driven a street car two years ago. By June, 1900, forty roads were operating from polyphase transmission systems, and everywhere east of the Mississippi, interurbans were spreading as fast as they could be laid down. The 73-mile Rapid Railway out of Detroit was a new and interesting example. Rapidity, of course, was relative; it was considered rather a fast schedule when then Empire Country express out of Joplin, Mo., made 19 miles in one hour, with nine stops!



A Palace Street Car of 1887 Intended for Limited-Stop Express Service. Note the Nifty Chairs.

Kansas City received an order of cars for regular city service, polished plate glass windows, bird's eye maple ceilings, curly-maple side paneling, lettering and decorations in gold. Those cars were still to be running 30 years later, though stripped of their magnificence.

A new and puzzling sound was being added to a good many street cars, the breathless panting of the air brake compressor; though the stored-air system had also its successes and its advocates. With the new brakes came the inevitable banging of flat wheels as the unaccustomed motormen were broken in.

Not content with the variegated functions already assumed, electric railways were launching into the strange seas of the amusement park business. This means of creating trolley traffic was not unknown in 1894, but now it seemed that such exotic subjects as merry-go-rounds, summer theaters and the selection of vaudeville talent had become one of the industry's principal interests, an interest that was to wane with the coming of automobiles and movies. Cable lines were being changed to electricity, even New York's Third Avenue road, so proudly installed only a few years before.

The prohibition of overhead trolleys on Manhattan Island had created the long-standing problem of how to operate crosstown and other light traffic lines which could not stand the staggering cost of the underground conduit. That problem was to produce there a series of oddities in the way of self-propelled vehicles, not the least of which was the survival of horse-cars until 1910. In that year the latest experiment was a compressed air car, with 2000 to 2500 lb. pressure in its tanks.

Fat years continue, and by 1905, all eyes are on the spreading interurbans. They are operating 60-foot cars, and the Indiana Union puts on the first buffet service. Lines extend rapidly. Consolidations are under way, and there seems no end to the possible development ahead.

Two most important technical advances have occurred, the steam turbine, and the high-voltage trolley. The turbine, introduced by Westinghouse, has grown from the small 400 Kw. sets at Wilmerding in 1899 to a 1500 Kw. set at Hartford in 1901. Electric railways are interested, the General Electric joins the development; (for a long time pinning its faith to the picturesque vertical shaft machine) very shortly both companies build 5000 Kw. units, and the monumental engine type generator is doomed. The turbine becomes, as it remains to this day, America's principal source of power.

The high-voltage trolley succeeds less immediately. In 1893 Westinghouse had experimented with single phase railway motors but it is 1903 when it is publicly announced that such a road is running in East Pittsburgh. It is 1905 before the first commercial installation. It was expected that the new system would greatly stimulate the already gigantic network of interurbans, by reducing substations to mere unattended transformers.

A picturesque incident of this period is the invasion of England by one Charley Yerkes, a Chicago traction magnate, who raids the London transportation system, captures great sections of it, and gives the Londoners an electric subway.

In this period, too, arrived the long-awaited New York subway. In its powerhouse was a long row of huge engine-driven generators, nearly duplicates of those built for the New York Elevated a little previously. They are worth mention: rating 5000 Kw. each, they are 43-feet in horizontal diameter; larger, it is said, than any machine that is to come later. The generator weighs 445 tons, nearly twice as much as a 90,000 Kw. generator of 1929. The Westinghouse Works had to build a new, especially high, factory aisle to accommodate them. They are the last, as they are the greatest, of the engine-driven generators, for the turbine is pressing close behind.

A few automobiles have appeared, unreliable, expensive, absurd. The street car observes them fearlessly, and gets a good laugh out of the ridiculous idea that automobiles bought

Tablet to Honor Memory of George Hannauer, Unveiled in North Station, Boston, June 5. Tablet Measures 24 Square Ft.

by the average man can ever affect the street railway! Why, look at what they cost to run! They can never produce a passenger mile as cheaply as the street car. It is conceivable, the Street Railway Journal concedes, large-mindedly, that big automobile buses may sometimes be of minor value as feeders, but "it is plain that the automobile can do comparatively little to reduce railway traffic on congested city streets," because if many people rode in automobiles, it would cause traffic congestion which is, of course, unthinkable. Thus early appear the street cars, two staple arguments against the automobile, which will be heard so frequently, for many a year: cost and traffic congestion.

(To be concluded in August.)

Memorial for George Hannauer

The memory of George Hannauer, late president of the Boston & Maine Railroad, who guided its rehabilitation from January 1, 1927, to November 2, 1929, was made a matter of permanent record in the New North Station at Boston June 5, when Thomas Nelson Perkins, chairman of the board of directors, unveiled a large memorial panel in bronze above the central gates of the station concourse. Representatives of state, city and of New England industry joined with the officials of the railroad in the simple ceremony of dedication and unveiling. Passengers moving in and out of the busy terminal paused, trains due to depart were held a moment or two, and the official party stood bareheaded, after a bugler, in the uniform of the Boston & Maine Employes' Band, sounded attention.

Honors Long Delayed

What was probably the most unusual ceremony in all America honoring the soldier dead, was carried out at Stronghold, Cal., just south of the Oregon border, May 30. During the course of excavation for the Southern Pacific's new cutoff between Alturas and Klamath Falls, last year, skeletons of two men were unearthed. Belt buckles, brass buttons and other decipherable insignia identified the dead as American cavalrymen. Officials of the railroad ordered the remains placed in caskets and reinterred, and an investigation made to determine their identity. This investigation developed numerous stories, none of which was sufficiently authentic to warrant acceptance. The indications are, however, that the two had been cavalrymen who were shot from their saddles by a marauding band of Modoc Indians on an early spring evening in 1873, when they left their camp on Tule Lake, to gather firewood. The railroad officials arranged to have the graves covered by a rock-faced mound and, in the absence of positive identification, a cross was erected bearing the simple inscription:

"Two Unknown Soldiers, Modoc War, 1873."

On Decoration Day, 1930, a northbound Southern Pacific train paused at the graves for 12 minutes while, in the presence of the train crew, the passengers, and many persons living nearby, the cross was placed in position. This done, Clifford Harter Post No. 162 of Alturas, and Tule Lake Post of Malin, Ore., performed the American Legion's ritual for the dead, fired a salute above the graves, and stood with bared heads while "taps" were sounded.

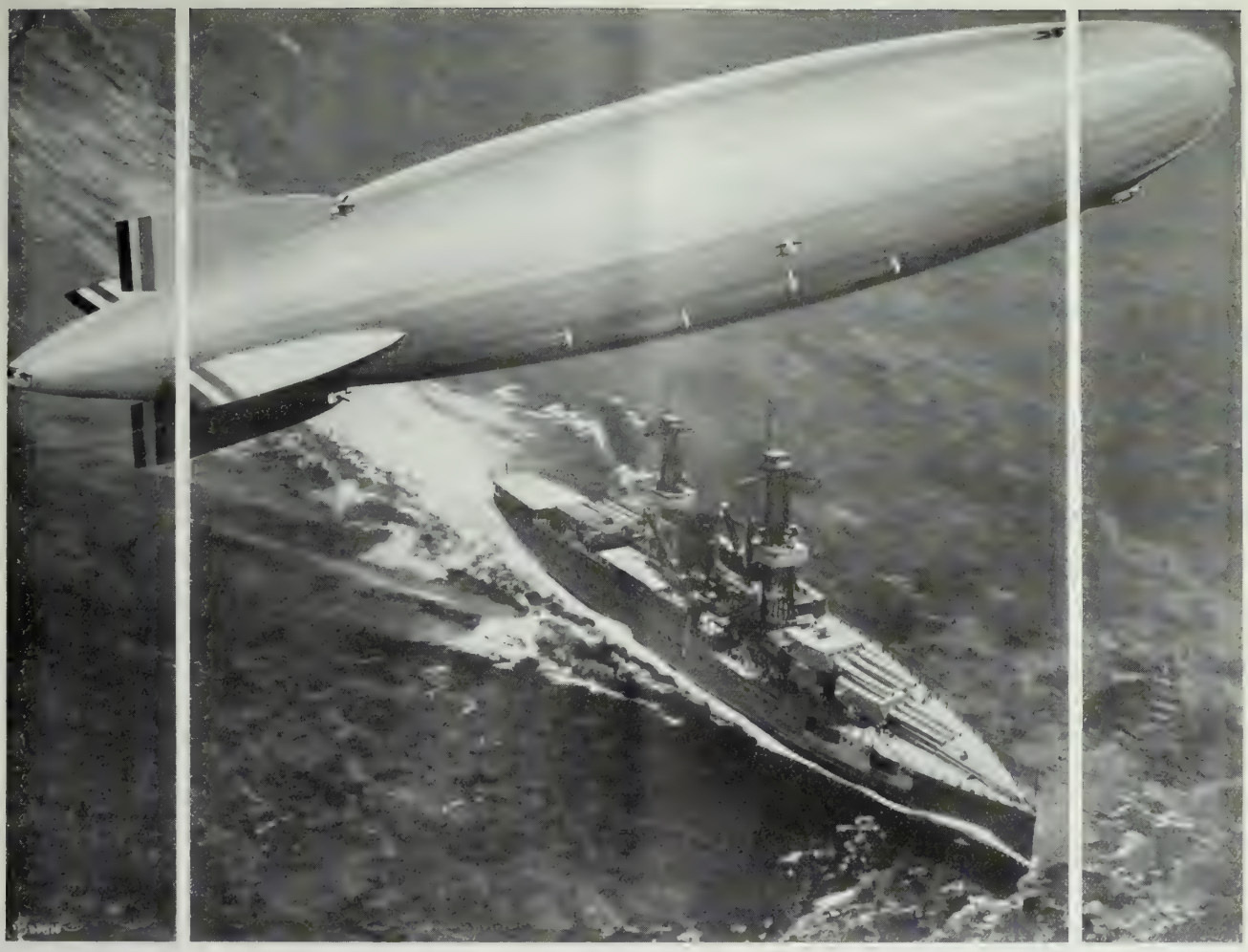
New Saskatchewan Lines

The Canadian National Railways has put into regular operation, 238 miles of new branch lines in Saskatchewan. The more important is the Sturgis-Hudson Bay Junction cutoff line, which shortens the Regina-The Pas service; 71.4 miles in length; it removes the necessity of making the 168-mile circuit through Swan River. A saving of 97 miles is made in hauling grain to Hudson Bay, and a similar distance in serving the new mining districts of the north country.

The C.N.R. also opened three new branch lines in the North Battleford section. These consist of 57.5 miles between Shellbrook and Medstead; 31.6 miles between Spruce Lake and Frenchman Butte; and 37 miles between Speers and Rabbit Lake. Besides providing needed transportation facilities to these prosperous grain growing sections, the addition of the Meadstead-Shellbrook and the Spruce Lake-Frenchman Butte branch lines provides a new direct route westward from Prince Albert to the Alberta boundary.

The Willowbrook-Parkview branch line, 22.3 miles in length, in the Yorktown section, northeast of Regina, is also to be opened soon.

Belated Honors for Long Lost, Unidentified Soldiers of the Modoc War. The Southern Pacific Holds a Train for the Ceremonies.



An Artist's Conception of One of Uncle Sam's Giant Airships Passing Over a Battleship. The comparison Is Accurate As to Scale.

Keeping up With The Engineers

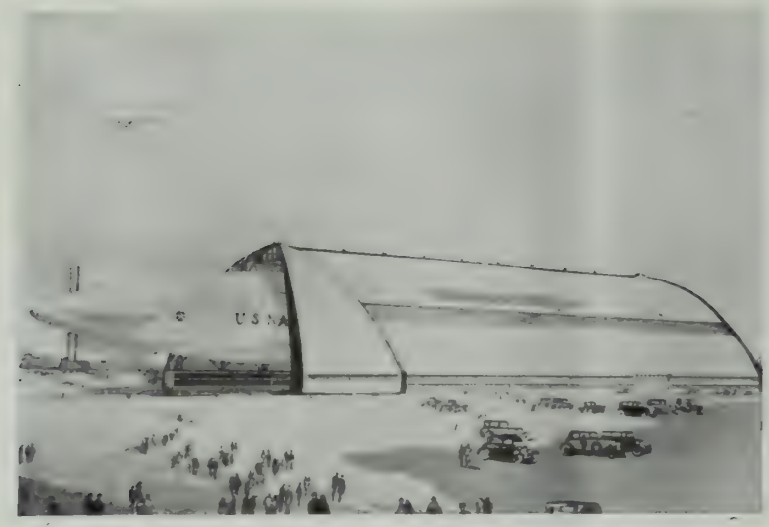
Something About the Two Gigantic Dirigibles Now Building at Akron, Ohio

By Geo. W. Early

THE MOST recent cruise of the Graf Zeppelin, the determination of Doctor Eckener to build an even larger ship, and eventually to establish regular dirigible service between Germany and South American cities, has stirred up discussion and much careful thinking about the future of air transportation.

In the light of recent events it seems that if the human mind is to keep up with the marvelous forward movement of the transportation engineers of land, water and sky, we shall need to exercise a keenness unknown in grandfather's day. Even our fathers were slow thinkers compared with the men who now usher in an entirely new era of speed, comfort and safety.

If your earth-bound mind is capable, perhaps you can visualize giant ships of the air speeding between 85 and 100 miles an hour, carrying as many persons as reside in a fair-sized town, as they soar across seas and continents, linking nation with nation. Such mighty monarchs of the upper reaches will be able to cruise to Europe and back, or from the Atlantic Coast to the Philippines, outermost American outpost, and back to Hawaii without refuelling or landing until they dock at Honolulu. These super-dirigibles, true leviathans of the air, will have a 10,000-mile cruising radius, will represent the zenith of modern transportation achievement, the last word in the ability of the en-



The World's Largest Airship Hangar at Akron, O., Where the Government is Building Its Big Dirigibles.

gineer to conquer time and space.

Such are the pair of giants an army of engineers are now fabricating for Uncle Sam at Akron, Ohio. Compared with the largest airships yet completed, these twin giants will stand supreme among "Pullmans of the Sky." The Los Angeles, for example, pride of the United States, is equipped with 2,500,000 cubic feet of gas; the Graf Zeppelin, first to encompass the earth and first to complete two successful transatlantic cruises, has 3,700,000 cubic feet. The next largest contenders are owned by the British, the R-100 and R-101, the most advanced airships yet in use, equipped with 5,000,000 cubic feet of gas.

But the twin giants which the Goodyear- Zeppelin Corpn. is building for the navy are nearly three times as large as the Los Angeles, twice as large as the Graf, and by 1,500,000 cubic feet larger than the British twins. These new ships, to be known as ZRS-5 and ZRS-6 will be equipped with 6,500,000 cubic feet of helium gas, providing the utmost in safety and cruising radius, and forecasting an entirely new era in speed in giant airships. In stability and long-distance service they are unequalled. Nearly 1,000 feet long with a maximum diameter of 140 feet, they will have a lifting capacity of nearly 200 tons. This is insured by the series of helium-gas "biscuits," or gas cells, which will be secured within the giant duralumin framework. Each ship, with cargo, crew and fuel supplies, will weigh about 170 tons. More than half of this weight will be accounted for by the vast superstructure, which will weigh nearly 90 tons. The gas cells alone will account for a dozen tons. Propelled by a battery of eight powerful engines instead of the five of the Los Angeles, and with the ignition systems so shielded as to permit uninterrupted radio communication, a new era of efficiency and speed is promised by naval engineers.

Radically different from any Zeppelins yet constructed, these ships provide "garage" space for a small fleet of airplanes within the hull which may be released and picked up while the ship is in flight. Imagine a round-the-world flight in which companies of passengers take side trips by airplane from the mother airship, visit cities here or there, or transact business while the giant pushes on, and then, at a speed of 125 miles an hour, join the larger ship miles distant from the point where the take-off was made!

The Los Angeles type of ships offers only a small advance in carrying capacity, speed and mechanical perfection over the earlier type of Zeps. Furthermore, the Los Angeles was constructed in Europe, whereas, the two new giants will be fabricated in the United States and thus represent the foundation of a new and giant industry in America. Because this project is so large, and the expenses involved are so great, it became necessary for the federal government to blaze the trail by use of engineering skill and treasury funds. No private interests could afford to expend the enormous sums which completion of these two giants will involve.

The ZRS-5 and ZRS-6 will be subject to none of the restrictions which have characterized former ships. A large staff of American and Zeppelin engineers, experts of the highest degree, toiled many weary months in the designing of these ships, that the building program which Uncle Sam has set forth to achieve might enjoy the accumulation of more than 30 years research, experience and obser-

—Herbert Photo

This Plane, Designed by J. K. Northrup of Los Angeles, is Said to be Fireproof. It Carries Six Passengers and Flies at 150 Miles An Hour.

—P & A Photo.

More Than 125 Planes Arrive at the United Airport, Near Burbank (Los Angeles) From Sacramento, Where They Put on the United States Army Air Corps' Greatest Aerial Show.

vation in the conquest of the air with giant ships. Airship transport adherents, whose number daily increases, declare that ships similar to these will be used extensively in the near future in long-distance transportation and trans-oceanic flights.

"With a transatlantic airship line in operation," suggested P. W. Littlefield, president of the Goodyear-Zeppelin Corpn., "a passenger could leave New York on a Saturday morning, arrive Monday morning at London or Paris, spend four days on his business affairs, leave Europe Friday morning taking three days on the return trip against the prevailing westerly winds, and arrive in New York the following Monday morning."

The two airships which engineers are now erecting in Akron are the direct descendants of the strange and ungainly craft that first took flight in the early days of the Twentieth Century. Development of the rigid Zeppelin-type dates back to Count Ferdinand von Zeppelin, a German who first conceived the idea of this kind of ship while serving as a volunteer officer in the American Union army, during the Civil War. There he had an opportunity of making ascensions in captive balloons at Fort Snelling, Montana, and later in Virginia. Then, as a colonel of cavalry in the Franco-Prussian War, Zeppelin saw free balloons blown over Paris during the siege of the French capital. From that date on the dreamer spent most of his wakeful hours studying and designing airships, and in 1896 retired from the army to devote the rest of his life to this cause.

Zeppelin built his first airship in 1900, but it was not until 1910—thirty years ago—after he had lost four ships, that his invention was accepted by the world. In the following four years Zeppelins carried 35,000 passengers without a single accident. The outbreak of the World War prevented the inventor from carrying out his great dream—to sail one of his ships to the United States. He did live to see his concern develop into one of the largest of the kind, and a peer among German industries. Among his staff of experts was Dr. Karl N. Arnstein, chief engineer and constructor of 70 airships. When the rights for North America were sold to an American firm, Dr. Arnstein came to this country as vice president and chief engineer of the Goodyear-Zeppelin Corpn. His designs in the naval competitions received first award, and on them was based the contract for the construction of the two super-dirigibles.

The most important airship improvement in recent years is the use of helium for inflating the great cells which insure stability. Helium gas will not burn. To the airship it insures the utmost in safety. The United States is in a peculiarly fortunate position in making use of airships for both commercial and military service, because of the available supply of this gas which here abounds as on no other spot on earth.

Soundproofing Plane Cabins

Recognizing the important part the comfort and convenience of passengers always will play in the development of air transportation, the aeronautics branch of the U. S. department of commerce more than two years ago sponsored experiments in soundproofing of airplane cabins, one major phase of which is virtually completed. The results obtained from the completed portion of the tests clearly point to the possibility of reducing the noises in aircraft cabins to the level of those found in railway passenger cars or even lower.

The experiments, conducted by the bureau of standards, were divided into two principal parts, one dealing with the reduction of noises at their source, particularly the propeller and

engine exhausts, and the other with the reduction of noises that find their way into the aircraft cabins.

The former line of experiment has still much before it, but the latter has already reached practical results, as the sound engineers have found several combinations of materials that possess the three prime characteristics for airplane cabin insulation: (1) The quality of shutting out sound, (2) the quality of absorbing sound, and (3) lightness of weight.

T. A. T. Buys Planes At $100,000

With plane travel increasing since the reduction of fares, the T.A.T.-Maddux Lines have authorized the purchase of four 18-passenger Curtiss Condor biplanes which will cost about $100,000 each.

The new Condors, larger than the standard planes on most European lines, will be used on the eastern division of the system between Columbus, Ohio, and Waynoka, Okla. The planes are powered by two 625-horsepower Curtiss Conqueror engines, with a high speed of 139 miles an hour and a cruising speed of 118 miles an hour. The unusually low landing speed of 49 miles an hour is considered the outstanding characteristic of the planes' performance.

The nation wide fare reduction, making air travel cheaper than rail transportation with Pullman charges in many cases, has taxed the existing equipment on most air lines, and operators of the systems believe that a wholesale change in flying equipment will result.

The ten-passenger planes now used on air lines often are forced to leave many prospective passengers at the airports because of the limited carrying capacity. The smaller ships, moreover, cannot be made to pay under the present rates, it is said.

Most Frequent Air Service

Air passenger service between Detroit and Cleveland is more frequent than between any two points in the United States and possibly in the world, says the American Air Transport Association. Planes make ten round trips every day between the two cities, one more than the number scheduled daily between San Francisco and Los Angeles. Where four companies fly passengers between the latter two points, only two, each operating five schedules daily, carry passengers between the Motor City and Cleveland.

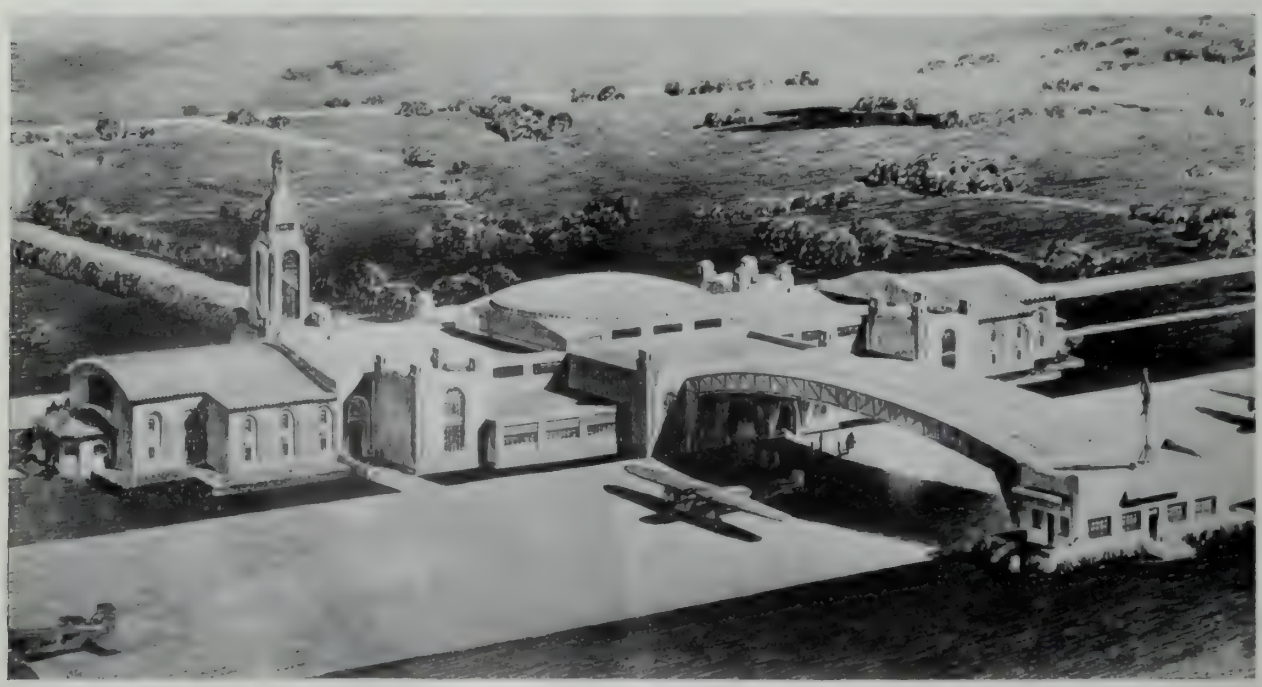
The acceptance of air passenger transport by both commercial and pleasure travelers has brought capacity or near capacity loads to practically all planes in the air passenger services. "The number of persons now flying the regularly operated passenger routes is increasing so rapidly," the association says, "that the patronage will more than double and perhaps triple the record of 1929 when 150,000 persons flew in regularly operated transport planes."

Unique Landing Stage

The Atlantic Transport Line recently put into service a new type landing stage to facilitate docking at London, which has eliminated the numerous inconveniences connected with landing passengers at Tilbury, 20 miles from the city, and a land transfer of passengers. Transportation engineers originated a new idea in perfecting the portable landing stage, which may assist other similar ports in solving the problem of quickly serving incoming liners.

Gangplank landing right in the heart of the London waterfront is now possible, owing to the new passenger landing stage which is used by ships operating between America and London. The structure consists of a floating stage alongside which the liners are berthed, of which a platform, 1,142 feet long and 80 feet wide, is the principal part. The stage projects into the river 370 feet in front of the original bank, and is held against two massive timber dolphins, one at each end, by four hinged steel booms and heavy mooring cables which permit it to rise and fall with the tide.

The same sun which gilds all nature and exhilarates the whole creation, does not shine upon disappointed ambition.—*Burke.*



Wide World Photo

Puerto Aereo Central, Which Is to Say, the Central Airport, at Mexico City, Opened in May, and to be Dedicated in September Terminus for U. S. Mail, and Passengers of Pan American Airways, Inc.

Editorial Comment

Good Sportsmanship

It was inevitable that sooner or later someone should invade the long-cherished kingdom of the Southern Pacific. In what the grayheads call the early days such an attempt would have been met in ways not having the approval of a governmental regulatory body, had there been one. Rough language probably would have been bandied about here and there. To understand this the outlanders must realize that ever since the 60's the S. P. has been monarch of the Pacific Coast. It has been a benevolent monarchy, however, and men old enough to have common sense know that without its energy and push California, Oregon, indeed the whole Pacific Coast region, would have suffered deplorably in its development. The King may have assessed his subjects rather heavily for his service, but not more heavily than that service actually was worth, when one considers what would have been the people's plight without it. History does not record any outstanding instances of philanthropy in those stirring times on anyone's part so far as we know. The pioneers always have to pay.

All of which is incidental to mention of the gentlemanly sportsmanship of Paul Shoup, president of the Southern Pacific, displayed so charmingly in his statement to the public ten days ago, following the government's approval of the Western Pacific-Great Northern proposed entry into California.

The Southern Pacific opposed this extension as vigorously as possible but dealt no foul blows in doing it. When the decision was announced after the long battle Paul, a trifle groggy, perhaps, restrained a perfectly excusable impulse to throw his bucket and stool at Mr. Adams and his handlers, rose a bit wearily, but smiling just the same, and went over to Harry's corner with congratulations and good wishes. Then, metaphorically, wrapping his bathrobe about him, he said that as good citizens the Southern Pacific accepts cheerfully the decision of the referee, the Interstate Commerce Commission which is, under the law, the final arbiter in such matters.

This, we rise to observe, is good sportsmanship. It renews one's belief in the all round decency of men, even in the turmoil and irritation of competition and business strife. It is all the more worthy of praise when one remembers that this decision is not merely a permit to lay a couple of hundred miles of track. It is a matter affecting, no one knows how seriously, the fortunes of two great lines, the Southern Pacific and the Union Pacific, and it will make an impress also on the traffic of the Santa Fe. A certain number of persons unfriendly to the Southern Pacific may find some satisfaction in the commission's decision, but persons in this class will be no more affectionate toward the invaders. The wisdom of the commission in granting the application is neither questioned nor affirmed. The people will be the final influence. Railroads have created tonnage in the past where none existed but it took years and millions of dollars to do it. If the new line can bring about this result the stockholders and the states affected will be gainers. California seemed to want the increased facilities.

Happy Days Are Here Again

Looking into theaters filled day and night by well-dressed people who certainly had to buy tickets creates the belief that what so many pessimists call an economic depression is having no very bad effect. Adolph Zukor, president of the Paramount Famous Lasky Corpn., told President Hoover, June 20, that returns from 1500 theaters show good business. People don't go to the theaters when they are broke.

In some parts of the country, notably Texas, Oklahoma and California, said Mr. Zukor, business as reflected by the theaters is "abnormally good."

After his conference with the President, Mr. Zukor said: "Our business corresponds favorably with last year's business, except that last year was above normal because of the novelty of the sound pictures. Eliminating last year's business, conditions in our industry are better this year than in any of the previous ten years." Mr. Zukor said he saw no reason for pessimism, and that his conclusions, based on a nation-wide survey of the motion picture industry by his and other organizations, were that favorable conditions will continue.

And No Recapture Clause

The Ford Motor Co., owned by Henry Ford, his wife, and his son, Edsel, made a profit of $81,797,861 or 8 per cent on more than a billion dollars. This agrees with a statement filed with the Massachusetts commissioner of corporations for 1929.

These profits were surpassed in 1922, 1923, 1924 and 1925, when Ford gains ran from $115,000,000 to $119,000,000 a year. Profits in 1926 dropped to $75,000,000. The old Model T had fallen behind the procession.

Comparison of production schedules with profits shows the Ford Co. cleared $44.19 a car during 1929. Production is now about 9,000 a day. The three-millionth car of the new model was turned out March 12.

Flanigan's Family Filosophy

Newspapers, with their customary leaning toward the more sensational side of life, are quoting General Manager Flanigan of the Milwaukee Road as saying family squabbles should be reserved for evening. A row during breakfast, according to the report of Mr. Flanigan's advice to employes, makes a man three times as likely to have trouble in his work.

Of course Mr. Flannigan didn't say anything of the kind. His advice,—and an Irishman's advice about a row ought to be considered expert testimony —was to this effect:

"Ham and eggs, garnished with smiles and pleasant words, make the breakfast that prevents train wrecks. A breakfast that fills a man's stomach with good food and leaves him in a contented frame of mind is ideal from the safety standpoint, for many an accident can be traced directly to family rows. Any man who goes to work without any breakfast, or who gulps his morning meal to the tune of a word battle with his wife is just three times as liable to bungle his work or confuse orders as the man who

has had a good warm meal and is mentally at peace."

It was a reporter's trick of misdirection to conclude that quarrels postponed from breakfast should be taken up during supper as unfinished business. Any sensible man knows that an unhappy employe is a very dangerous person whether his mental disturbance be due to incompatibility in his domestic relationship or to a burden of debts. No man can keep his mind on his work if bills are gnawing at him.

However, Mr. Flanigan knows, as do most of us, that few women start the day by throwing things at their husbands unless there is a sound reason for it. Indigestion, brought about by eating unwisely or by poor cooking, headaches from the same cause or some bad habit; bridge, gossip—all these things tear families to pieces, and have their part in destroying Safety First in railroad work. Obviously, a row at breakfast ruins the day, but a riotous dinner punctuated by cruel words is just as bad because it spoils the sleep that men and women need to repair the nerves after the duties of the day, and moreover, sets a wretched example for the children. Successful, happy family life is possible only when husband and wife practice tolerance, forbearance, patience, a willingness to forgive—these and a great deal of love. There are no better rules for Safety First.

Railroads, Good Citizens

In one of his informative advertisements President Clift of the Central of Georgia shows how railroads are helping to improve general business conditions, as President Hoover asked them to do.

During the first three months of 1930, Mr. Clift says, the capital expenditures by the railroads of the country for new equipment and additions and betterments to railway property totaled $223,772,000. This was $96,653,000 above expenditures for like purposes during the same period of 1929. The railroads spent $45,225,000 more for roadway and structures, and $51,428,000 more for equipment in the first quarter of this year than in the first quarter of last year.

The railroads, asked by the President of the United States to help revive general business by not curtailing capital expenditures, promised their cooperation last December, and have more than fulfilled their pledge.

"However, the ability of the railroads to finance such expenditures and to continue programs of improvement in future must always be determined by the public" the statement continues, "If the railroads are treated on the basis of sound economic principles, if they are permitted to earn a fair return on their investment, if they are not overtaxed, if there is no discrimination against them and in favor of competing forms of transportation, they can move forward with greater usefulness to the public."

Traffic, Transportation and Taxes

One can not withhold praise and admiration for the courage of railway men, street, steam and electric, in continuing to serve the public more and more efficiently at rates yielding a return so low that no other business in the country would continue to function under them. How such service is to be maintained and improved in the future is a mystery too deep even for a Van Dine, at least with respect to street and electric lines. Material costs and wages continue high, and fares low and lower while taxes are growing more constantly burdensome. The history of human behavior records nothing so peculiar as this growing disposition to tax utilities in the belief that some mysterious treasure chest can be drawn upon to pay the bill.

In the Nation's Business for May, Merle Thorpe tells the story of a visitor in Washington who hired an old darky to drive him around to see the sights. The darky grew enthusiastic, waved his arm at the Botanical Gardens, the museums, the parks and monuments, and said, "Jest think! It's all free. It don't cost nobody nothin'. The gov'mint pays for it."

The negro's attitude is that of the average citizen who imagines the electric or steam railway is paying for the school house or other public improvement, forgetting that every dollar taken from a railroad in taxes comes, necessarily, from the public's pocket. Mr. Thorpe continues:

"Most people think the corporations and the rich pay the taxes. This fallacy, more than any other single thing, is responsible for our increasing tax burden. I once observed how skillfully one million dollars was extracted from a state legislature by the argument that most of the money would be paid by the railroads, anyway. The state, the argument ran, would be getting a dollar's worth of university buildings for 50 cents.

"But the naked truth is that every man and woman who ate a meal in that state, who bought a suit of clothes, or who lived in a house, helped to pay the dollars which the legislators thought they were taking out of the hide of the railroads.

"The railroads simply collected it from the people who shipped freight or bought goods which some one else had shipped."

Speaking the other day to the convention of the American Electric Railway Association, Paul Shoup, the retiring president, decried the excessive taxation of electric railways in California.

"It is absurd," said Mr. Shoup, "as shown by the recent report of a taxation committee of California, that the electric railway industry, the least remunerative of railways in this state, should be bearing the highest tax, relatively, of all public service corporations.

"It is absurd that these companies should be compelled to continue the paving and maintenance of sections of streets and highways, in many instances the major part, when the tremendously increased traffic of the last few years of motor vehicles used in private service is wearing them out.

"It is absurd that these companies should be compelled to pay, in addition to normal taxes, income taxes to cities, license taxes of one kind and another, provide street-lighting facilities and so on when each community should know that either the companies' liability in existing conditions to render a proper service is greatly impaired by these imposts, or that it must pay in higher fares for these additional tax collections."

It Wasn't True

In an editorial entitled "Free Speech," printed in the May edition reference was made to testimony given before the senate committee on interstate commerce in April with respect to the proposed consolidation of the Great Northern and the Northern Pa-

cific. In this testimony it was said the Northern Pacific had issued a bulletin forbidding employes to discuss the merger. A letter just received from President Donnelly says:

"Inasmuch as this statement was made in positive terms by an employe of the Northern Pacific Railway Company, no criticism attaches to your assumption that the statement might be true. However, no such bulletin was ever issued. The man who made the statement before the senate committee admits now that he was wholly misinformed."

We are glad to publish Mr. Donnelly's letter correcting the inaccuracy in the testimony to which we referred.

What Will They Do Next?

Some one said, a few years ago, that if two-thirds of the inventions perfected and hidden were used it would require the abandoning of machinery worth hundreds of millions. And still, as the records show, brains go right ahead inventing. More than 3,500 persons applied for patents in the last week of May, before the rate was advanced to $25, almost doubling the number of average weekly receipts of first applications, according to Commissioner Thomas E. Robertson, of the patent office, department of commerce.

Comparative figures for the leading industrial nations of the world indicate that the United States leads by about 200 per cent in the number of patents issued over its nearest competitor, France. In 1928, the United States issued 42,711 patents; France, 22,000; Great Britain, 17,695; Germany, 15,598; Switzerland, 5,898; Japan, 4,704, and Czechoslovakia, 3,450.

Air Travel Increased in May

The American Airways Inc., reports that 6,935 passengers were carried by its planes in May compared with 6,741 in April, at that time the banner month. Revenue increased slightly more than 4 per cent due to slight growth in length of the average ride. Planes of Universal, Colonial and Southern Air Transport divisions and the Embry-Riddle Company flew 306,884 miles during the month. Striking increases were shown on the New York-Boston, Chicago-Cincinnati, Cleveland-Chicago-Kansas City, Chicago-St. Louis-Tulsa, Dallas-Brownsville, Kansas City-Tulsa and Tulsa-Oklahoma City runs.

This makes a total of 27,255 passengers using the facilities of American Airways, Inc., and Embry-Riddle Company during the first five months of 1930.

The Importance of Common Sense

In another part of the magazine, this month, we print an article about the Safety Appliance Act, entitled "When is a Train a Train?" While this article was being put into type news came of a decision affecting every railroad in the land. W. T. Faricy, general solicitor for the Chicago, St. Paul, Minneapolis & Omaha Railway, received notice from the U. S. circuit court of appeals, seventh circuit, that the court had upheld the Omaha's defense against the prosecution by the Interstate Commerce Commission in the matter of attaching helper locomotives to the airbrake control system of the head locomotive.

In 1928 the Interstate Commerce Commission ordered the Omaha to treat helper or "pusher" locomotives on short grades the same as cars. That is, each must be coupled to the air hose of the train. This would necessitate stopping the train to release the pusher engine, cause much loss of time and seriously interfere with operating efficiency without increasing safety, the Omaha contended.

The Omaha line refused to obey the Interstate Commerce Commission, holding that it was not required to do so under the Safety Appliances Act. The government started prosecution on the case. The U. S. District Court at Madison, Wis., found for the Omaha road and against the government. The latter appealed, and the seventh circuit, court of appeals, upheld the district court and the railroad. Another test on the same point is now pending in the circuit court of appeals, eighth district.

Rail officials estimate that enforcement of the Interstate Commerce Commission order throughout the United States would cost carriers several million dollars. The roads generally have been disregarding the rule, pending decision of the Omaha case. The government may ask the U. S. Supreme Court to review the finding of the circuit court.

Is Business Poor?

When business is slow what do you do about it? Do you shut off the lights, draw down the curtains, cancel your advertising, and then sit back in the gloom waiting for better times? Is that your way of helping to bring back normal conditions? If so perhaps it may cheer you up a bit to read a few lines from the old reliable firm of John Wanamaker, New York. When dull days come, as they do in every business Wanamaker's do a little special advertising, just as you ought to do. And the result always is pleasant.

Not long ago Wanamakers told some inside business facts in a display advertisement. Here is a paragraph:

We will let you peep in, behind the scenes, as it were, and tell you that on one day last week we sold more than $36,000 in women's shoes. From one advertisement we have sold $60,000 of towels. From another $40,000 of sheets. From another $100,000 of rugs. Furniture days from $50,000 to $75,000 are not unusual. Nor $30,000 to $65,000 of men's clothing. In objects of art sales on individual pieces have ranged from $15,000 to $50,000.

How long would Wanamakers stay in business if they no longer advertised? How long do you suppose railroad managers will remember your name and product if they no longer see the name in regular advertising?

Remember the classical yarn about Sapolio, a word once as well known as Ivory soap? When the head of the firm producing Sapolio died the inheriting family decided the name was so well known that advertising was no longer needed. Well, only gray-haired persons now ever heard of the word Sapolio. It died—the unhappy result of unjustified egotism. There's a song you ought to try on your piano; the first two lines are:

How soon we are forgotten
When we cease to advertise.

Another Fine Theory Gone

If you chance to be one of those economical souls delighting in the saving of waste paper you might just as well quit. It has no value. B. M. Frost, in the paper division of the department of commerce,

sends from Washington a statement declaring the demand for waste of this kind has ceased, for the time being at least.

As an example of the diminished value of this material, an announcement is cited by the National Association of Waste Material Dealers, Inc., calling attention to the fact that temporarily at least, waste paper has lost much of its usefulness in the production of new or fresh paper. In order to inform the public of the situation, Boston dealers handling waste paper have actually been buying waste paper, carting it to the dump and burning it. Recently, it was pointed out, huge quantities were burned in a great bonfire in that city. Of course the explanation for this situation is found in prices. Storekeepers on some railroads have made good records saving waste paper.

Just Petered Out

The Associated Press informs the country that the last of the Eckerts, an old railroad family, retired June 1. For two generations the John Eckerts have been conductors on trains that have carried presidents to and from Gettysburg for Memorial day addresses. The first John Eckert was in charge of the train that took Abraham Lincoln to the battle field to deliver his classic address.

The second John Eckert was conductor of the train that took President Roosevelt and then President Coolidge to the battle field on Memorial day. This John Eckert retired on a pension June 1.

The third John Eckert, a federal customs employe, has no yearning to become a railroad conductor, although he was exposed to the same bug in his boyhood.

Where Business Improved

Figures released by the San Francisco office of the car service division, American Railway Association, having jurisdiction over California, Arizona, Nevada and New Mexico, indicate that, for the first time this year, the car loadings for one month exceeded the loadings during the corresponding month of 1929. This information is for May in which month 177,381 cars were loaded, an increase of 7,900 over May 1929. It is pointed out that the increase of 41 per cent in the loading of grain and grain products, 15 per cent in less carload merchandise, 12 per cent in gravel, rock and sand, 10 per cent in perishables and 6 per cent in miscellaneous loadings, such as cement, canned goods, dried fruits, manufactured articles, etc., brought about the 4.7 per cent increase for all commodities during the month. Lumber and forest products showed a decrease of 3,000 cars, or 7.9 per cent.

A Philosophy That Helps

"The surprise of life," said that gentle philosopher, Philips Brooks, "always comes in finding how we have missed the things which have lain nearest us—how we have gone far away to seek that which was close by our side all the time. Men who live best and longest are apt to come, as the result of their living, to the conviction that life is not only richer, but simpler, than it seemed to them at first. Men go to vast labor seeking after peace and happiness. It seems to them as if it were far away from them—as if they must go through vast and strange regions to get it. They must pile up wealth, they must see every possible danger or mishap guarded against before they can have peace. Upon how many old men has it come with a strange surprise that peace could come to rich or poor only with contentment, and that they might as well have been content at the very beginning as at the very end of life! They have made a long journey for their treasure; and when at last they stop to pick it up, lo! it is shining close beside the footprint which they left when they set out to travel in a circle!"

Get In or Get Out

As an aftermath of the International Railway Congress held in Madrid in May the old discussion again develops of the value of these meetings to the American railroads. This is further accentuated by the decision to hold the next Congress at Cairo, Egypt.

Of course, there is a question as to the direct benefits secured by the delegates who attend the congress. This is partly due to their willingness to accept the old bromide about conditions, equipment, etc. in America being so different that we have no community of interest or anything to learn.

They seem to overlook entirely the important part other nations have played in the development of American railroads. Take, for example, the locomotive alone. We owe its origin firstly to England. Then looking further we find that the Superheater and the force feed lubricator came from Germany, the injector from France, the cut-off from Russia and that the compound engine, the three cylinder engine, the Walschert valve gear, the feedwater heater, piston valves, etc. were all European developments, even the water scoop was used in England as early as 1860.

It is true, they did not come to us in their present highly developed form but the opportunity afforded our engineers to study these early developments in other countries saved the American roads millions of dollars.

American activity in the congress has been rapidly diminishing, since the meeting in Washington in 1905 and the number of roads holding membership has decreased.

It is high time if we are going to hold our position with the nations of the world and maintain their respect both for our country and its railroads, that some action be taken to support more actively the congress. Let's join with the English speaking nations to make the programs more valuable to our interests, let's join with Canada in her invitation to have the congress held in that country in 1936. Now is the time to do something, not ten or twenty days before the next meeting. Let's get some of the big railroad systems not now members to join. They can well afford it as a patriotic action and they owe it to the roads who are now members to help carry some of the burden for the value they receive indirectly from foreign developments.

But, if you are not going to get in then for goodness sake let's get out. But remember if you get out you can't expect the courtesy and assistance which these nations have always given the engineers we sent abroad. You must say "Oh Lord We Are Sufficient Unto Ourselves" and close the door of cooperation and keep your engineers at home.

The Great Northern Into California

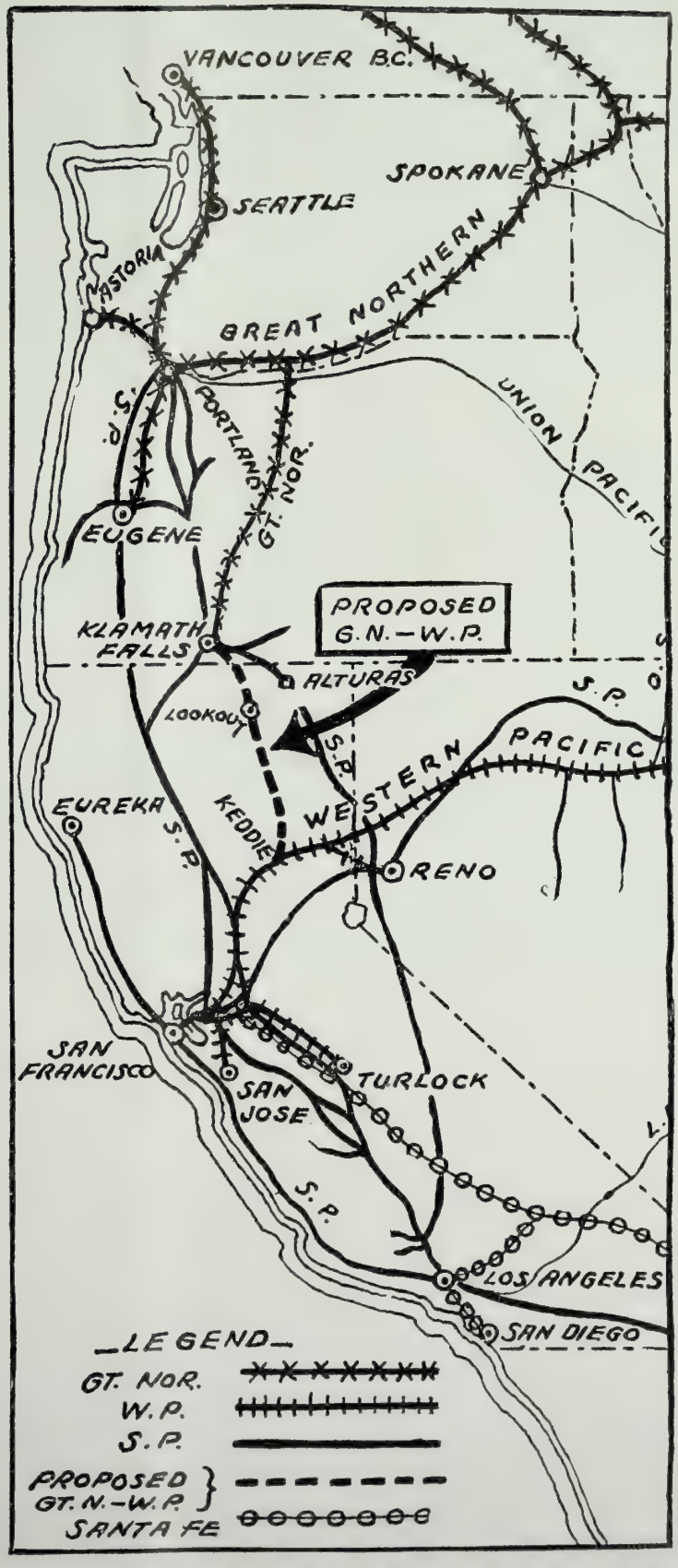
I. C. C. Approves Plan of James Lines June 20

By Charles Dillon

A NEW transcontinental rail route into Northern California and the San Francisco region was authorized June 20 when the Interstate Commerce Commission approved the application of the Western Pacific and Great Northern systems for joint construction of 200 miles of new line in that state.

The commission order permits the Great Northern to build southward about 88 miles from Klamath Falls, Ore., meeting there in Northern California an extension of the Western Pacific, beginning somewhere near Paxton, on that road's present main line, and running northward 112 miles. In addition the two cooperating carriers propose to build a branch 36 miles long to a point called Hambone, in the Siskiyou Mountains.

About $10,660,000 will be spent



Map of the Pacific Coast States showing the chief railroad systems and their relation to the new line to be constructed between Keddie, Calif., and Klamath Falls, Ore. The hook-up of the Great Northern, Western Pacific and Santa Fe is shown as well as the competing Southern Pacific.

This Contrast Between Locomotives, One on a Branch Line, the Other Pulling the California Limited, Is Contributed by the Photographer, William F. Ziesemer, an Employe of the Santa Fe.

by the Western Pacific on the new line it will construct, while the Great Northern will spend $3,570,000, and the two roads together on the branch line will invest $500,000 more.

In addition to enabling the Great Northern to reach down from the Northwest over its present rails through Oregon to California, the new construction will strengthen the Western Pacific in its more direct transcontinental line through Salt Lake City and Denver.

The Southern Pacific and the Union Pacific offered, if the construction was halted by the commission, to make an almost complete revision in the present applications of freight into and out of California and to make joint arrangements for handling business which they control exclusively.

These proposals the Great Northern and Western Pacific rejected in favor of pushing forward their own building.

"The principal importance of the proposed line is as a bridge or connecting link between systems," the commission said in rendering its decision. "This is true whether judged from the standpoint of prospective earnings or diversions of traffic from other lines. The line will aid in the development of a great timber area and some considerable agricultural areas in Northern California.

"The local traffic probably would be insufficient to justify a line built to the standard here proposed; but considering all traffic available the applicants have reasonable prospects of earning a fair return on their investment.

"Compared with the benefits which will accrue to the people of the Pacific West and Northwest through the establishing of new competitive routes, stimulating the interchange of products, the advantage of a diversified car supply, additional passenger service and the development of the local territory, the moderate capital expenditure here proposed seems amply justified."

The commission approved the one condition that both applicants were agreeable to, namely, that the Great Northern should permit the Western Pacific to have joint use, at reasonable rates, of a short stretch of track between the Bieber terminals and the connection with the McCloud River Railroad near Lookout.

This is the Western Pacific opportunity to reach the McCloud River Railroad over a connection to be constructed by the two systems from near Lookout to Hambone. The I.C.C. has granted permission for the two lines to purchase the McCloud River line, which cuts through the Sierra Nevada range along the Pitt River, connecting with the Southern Pacific at Shasta City.

It is suggested by the commission that the Great Northern arrange terms with the Southern Pacific for joint use of the latter's Alturas line for 24 miles out of Klamath Falls. It is pointed out that a construction cost saving of about $800,000 can be effected.

Nothing was said in the I.C.C. opinion as to the purchase of the Indian Valley Railroad from Paxton to the Engle Mine via Crescent Mills. The Indian Valley line intervened in opposition to the application. Officials of the Western Pacific, however, have stated that acquisition of the Indian Valley line will be necessary, for at least a part of the distance.

The Southern Pacific and Union Pacific in opposing the extension estimated they would together lose at least $6,000,000 per year in gross revenue and denied any compensating advantage would be realized by the public.

Both opposing railroads offered to make joint through rates from California territory to all parts of the country over the systems of the applicants in case the application was denied. Removal of the so-called "Shasta arbitrary," by which all round trip tickets using the Southern Pacific one way and a northern line the other, have cost the passenger from $17 to $25 additional, was offered by the Southern Pacific. The applicants rejected the opposition offers.

The victory of the two railroads also is a victory for the state of California, which intervened in favor of the applicants through the railroad commission, and for nine other states —Oregon, Washington, Idaho, Montana, North Dakota, Utah, Colorado, Arizona and New Mexico—all of whom made appearances at the hearing last year and offered evidence in support of their arguments. Nevada was the only state opposing the application.

The Denver & Rio Grande system joined with the applicants, while the Union Pacific and its three chief subsidiaries joined the Southern Pacific in opposition.

The Santa Fe, while not appearing in the case, was a party in that it signed an agreement with the Western Pacific and Great Northern for interchange of traffic and establishment of through rates.

In its original presentation before Director Mahaffie, the Great Northern counsel and traffic officials stated the joint rates with the Santa Fe and Western Pacific would be made applicable also to the Northern Pacific, Milwaukee, Spokane, Portland & Seattle and the Spokane & International, which it was said would "enlarge the market for California products."

The Spokane & International Line also will give a connection to the main Canadian lines and open another great marketing area.

Practically every city in the Northwest and many in the intermountain area also intervened in behalf of the applicants, either through chambers of commerce, shippers' organizations or city councils.

In California, the city of San Francisco, the Chamber of Commerce, Down Town Association, the Oakland City Council, Oakland Chamber of Commerce, Stockton Chamber of Commerce and nearly 30

other business and civic organizations, intervened for the applicants.

The Southern Pacific, on the other hand, had only four civic organizations in support of its opposition. They were the Reno Chamber of Commerce, Modoc County Development Board, Alturas Chamber of Commerce and the Good Railway Service Association.

Paul Shoup, president of the Southern Pacific, said in a public statement when the decision was made public:

"Congratulations to the Western Pacific and Great Northern.

"I wish earnestly again to thank the thousands of shippers and the many communities who believe as we do that the existing facilities, rail and water, with additions from time to time, are ample to take care of all existing traffic and all that may be created, and that the support permanently of the new line must come principally from business diverted from us and our connections.

"If events prove us wrong in any substantial way in this view, we shall be pleased as well as astonished.

"In any event we shall, as good citizens, cheerfully accept the decision of the Interstate Commerce Commission, which is, under the law, the final arbiter in such matters. I shall be interested in reading the full text of the decision."

Acquiescence in the decision without further recourse to possible legal delays means the probable start of construction work on the 200-mile Keddie to Klamath Falls line by the first of August.

H. M. Adams, president of the Western Pacific, and W. P. Kenney, vice president in charge of traffic for the Great Northern, both announce they are ready to proceed with construction immediately. The I.C.C. order, however, is not effective until July 20.

H. M. Adams, president of the Western Pacific, said:

"Naturally, we are very much pleased and gratified at this decision. It means much for the Western Pacific, and also, we believe, marks the beginning of a new era for California. As California prospers, the Western Pacific prospers.

"We are prepared to proceed immediately with the acquisition of rights of way and the construction of the line almost immediately after the permit becomes effective. All the engineering plans are ready, finances have been arranged and no difficulty is expected in getting the project under way.

"We ought to be at work by the end of July and will continue without interruption until snow flies. In case of a mild winter we may be able to carry on the work, especially tunnel construction, right through."

If construction is begun as hoped, the two lines can be completed by the fall of 1931.

Saturday, June 28, the Official Opening of the Cleveland Union Station Was Celebrated at a Luncheon Given by the Chamber of Commerce, in the Main Concourse. The Picture Shown Here Is An Evening View of the Handsome Structure.

Have You Noticed It?

Retail food prices on May 15 were below the level of April 15 and of May 15, 1929, according to a statement issued June 19 by the bureau of labor statistics, department of labor. For the month ended May 15 food was cheaper, on the average, in 43 of 51 of the larger cities of the country. Six cities showed increases of less than 0.5 per cent and two cities reported no change. However, compared with the average cost in 1913, food on May 15, 1930, ranged from 63 per cent higher in Chicago to 31 per cent higher in Salt Lake City.

Prices on 22 articles for the month dropped from 26 per cent for cabbage to less than half of 1 per cent for round steak, sliced bacon and wheat cereal.

On the Cover

The picture on the cover this month is shown through the courtesy of the Reading Company. The photograph was made at the Newberry Junction shops of that company.

There were 31,500 persons killed in accidents to motor cars last year, while but 53,381 persons were killed in action, or died from wounds, among the American forces during the World War.

When Is a Train Really a Train?

When Must Air Be Used if the Safety Appliance Act is Obeyed?

By Lyle J. Iversen

WHAT IS A train? The answer seems so simple that few railroad men would care to trouble themselves to define it. But, simple as it seems, it has presented to the courts of the country one of the most intricate problems they have been called upon to solve.

When the Safety Appliance Act says it shall be unlawful to run any *train* without power brakes, operated by the engineer, on 85 per cent of the cars, the provision seems simple enough to most railroad men, but it has not been easy for the courts to enforce it. Judge Hutcheson said in the case of U. S. vs. T. & N. O. Ry. (1926, 13 Fed. 2, 429) "The decisions show that, while there is no difficulty in applying the act to ordinary main line movements, and none in refusing its application to ordinary yard and switching movements, there is a twilight zone between the two which, like a veritable 'No Man's Land,' has been the scene of judicial struggles of no mean magnitude in the course of which expressions have been used which, considered apart from their context, serve only to confuse."

Railroad managements frequently are astonished to find themselves suddenly haled into court and fined for conducting movements of cars without air, where they have been conducting the same movements, in the same manner since the beginning of railroads secure in the belief that they were performing switching operations to which the air brake requirement could not apply.

When must air hose be coupled? The obvious answer is whenever the movement constitutes a train. About 1913, twenty years after the Safety Appliance Act had gone into effect, the government first decided that cars being handled by switch engines were trains. A campaign, or more aptly, an epidemic of prosecutions began to plague the railroads of the country, to force them to switch with air. These prosecutions were astonishingly successful. In a case against the Atlantic Coast Line the court found itself constrained to hold that the act applied to any movement of cars whether used in regular transit or switching operations. (U. S. v. A. C. L. Ry. 1913, 214 Fed. 498) This case represented a trend of decisions which, had they not been checked by the Supreme Court of the United States, certainly would have ruined every railroad in the country.

The Lackawanna's New Terminal Warehouse and Freight Station in North Jersey City.

Most of these cases were decided not upon the merits of the requirement in the particular case but "upon the dictionary." For example, in the case of U. S. vs. Grand Trunk Ry. (1913, 203 Fed. 775) the court arrived at its conclusion thus: "In Webster's Dictionary the word 'train' is defined as a connected line of cars or carriages on a railroad. This definition induces the belief that congress in enacting the Safety Appliance Act used the word 'train' in the ordinary and not the technical sense, regardless of the varying rules and practices of carriers. (Citing another case.) By a parity of reasoning the words 'any train' are believed clearly to include all trains having cars coupled together and a locomotive drawing them, irrespective of whether a caboose is attached or markers displayed."

If the dictionary is the test, as this court thought, then the railroads might as well give up because any conceivable movement is a train within the definition. But as the circuit

W. L. Lentz, Engineer, Motive Power, New York Central, Visited Old Buildings at Toledo, Spain, During the International Railway Congress at Madrid.

court of appeals for the eighth circuit said: "One fundamental trouble with such reasoning is that it proves too much. The word 'train' of course covers any string of cars hauled by an engine, but if the statute is to be applied to all trains falling within this definition then it covers all movements of cars by means of a locomotive in switching operations, and it would make no difference whether the movement was on a main track or a siding. Such a result reduces the reasoning to an absurdity, because its application to railroads would operate as an embargo on commerce." (C. B. & Q. Ry. v. U. S., 1913, 211 Fed. 12).

The Supreme Court of the United States tackled the problem finally in a case involving movements in the Erie's terminal for New York City. The case of U. S. vs. Erie Ry. (1915, 237 U. S. 402, 35 S. C. 621, 59 L. Ed. 1019) is the leading case on the proposition. It laid down the rules that have been followed ever since as the ultimate guide. Says the court through Justice VanDevanter:

"It will be perceived that the air brake provision deals with running a train, while the other requirements relate to hauling or using a car. In one a train is the unit and in the other a car. As the context shows, a train in the sense intended consists of an engine and cars which have been assembled and coupled together for a run or trip along the road. When a train is thus made up and is proceeding on its journey it is within the operation of the air brake provision. But it is otherwise with the various movements in railroad yards whereby cars are assembled and coupled into outgoing trains, and whereby incoming trains which have completed their run are broken up. These are not train movements but mere switching operations, and so are not within the air brake provision."

The court, however, apparently feeling that it had said too much put an end to all liberality by its decision in the next case that came to it on the subject. This time it was the Northern Pacific at Duluth, Minn., that engaged the attention of the court. The opinion lays down the proposition that: "A moving locomotive with cars attached is without the provisions of the act only when it is not a train; as where the operation is that of switching, classifying, and assembling cars within railroad yards for the purpose of making up trains." (U. S. v. N. P. Ry., 1920, 254 U. S. 251, 41 S. C. 101, 65 L. Ed. 249). That is to say wherever coupling air is not clearly impossible, the act applies. That is the latest authoritative pronouncement, and that is the *law*.

Judges are, of course, not railroad men; and, it might be added, neither are the lawyers who argue the cases in most instances. The courts reach their conclusions by determining what purpose the act was designed to serve, and deciding in the manner that seems to them most likely to accomplish that purpose. Thus, to the average layman, the only conceivable purpose of a law requiring trains to operate with 85 per cent of the cars under air would be to facilitate quick stopping, and thereby prevent collisions with other trains and objects. That is clearly the view taken in the overwhelming majority of the cases of this kind and is the basis for the present state of the law on the subject.

Did congress intend to make that unlawful which had never been considered an evil? The inability of trains to stop with sufficient promptness never was a serious problem. Their limitations were recognized and operations were conducted accordingly. What prompted the action then? It was the appalling number of injuries occurring every year to trainmen falling from the tops of moving trains. It was the custom to stop moving trains with hand brakes operated by brakemen traveling over the tops of the cars. In snowy or icy weather, or when the train included open cars, this work, dangerous at any time, became doubly hazardous, until the casualties could be counted in thousands.

So serious was the problem that in the presidential campaign of 1892 both major parties adopted planks pledging themselves to remedy the evil. The result was the Safety Appliance Act of 1893. A systematic search of the Congressional Record during the time that the bill was under consideration fails to reveal any other motive than to obviate the necessity of men going to the tops of the cars to use hand brakes. The wording of the act will tend to con-

By Burton Holmes for Ewing Galloway

Building Operations at the Left Give An Untidy Aspect. Almost Every Kind of Transportation Except Airplanes Is Seen Here. A Street in Madrid.

firm this statement. Section One concludes:

". . . or to run any train in such traffic that has not a sufficient number of cars in it so equipped with power or train brakes that the engineer on the locomotive drawing such train can control its speed without requiring brakemen to use the common hand brakes for that purpose."

If the latter clause is regarded in connection with the matter that accompanies it, it will follow that the air brake section was intended to apply to operations where it was the practice to control the speed of the train by the use of the common hand brake. The application of the provision to any other condition is not warranted by either the express wording or the intention of the act. It is submitted that it has never been necessary or customary, since the invention of efficient locomotive brakes, to control the speed of yard drags by sending men out to use the hand brakes. Such movements are, for the most part, conducted at such slow speeds that the use of hand brakes would be futile. The evil was one presented strictly by road operations where trains attained considerable speeds and did not operate by vision.

The chairman of the committee which had charge of the bill in the senate explained it by saying: "When we get the cars of this country so equipped with air brakes that the men who are on top of the cars will be taken off and thereby relieved from the danger of such positions, there will be no cause for further legislation on the subject, in my judgment."

On its face it is evident to railroad men that such a law was never designed to apply to switchmen working in yards. It is ridiculous to suggest that yard engines were meant to operate without men on top of the cars. It is patent that a distinction was intended between yard and train operations. Although the courts have steadfastly refused any such distinction in the terminal air cases, nevertheless, in another connection, in a wholly dissimilar line of cases, they have impliedly acknowledged that the act is confined to road movements.

The act has been held repeatedly to prohibit the use of brakemen on the tops of trains moving on the road. (U. S. v. G. N. Ry. 1916, 299 Fed. 927, 144 C. C. A. 209). Has it ever been suggested that the use of men on the tops of cars in yards is illegal? The same clause of the act applies to both. The obvious answer is that the courts have in this connection acknowledged the distinct character of yard operations. For the sake of consistency, is it not as logical to hold that if the act applies at all to yard operations, it applies in all its force? If a cut of cars moving with a switch engine is a train on the same basis as a train on the road, where is the ground for distinction? By a parity of reasoning, whenever switchmen are on the tops of the cars for any purpose they are violating the spirit and purpose of the Safety Appliance Act, which was designed to keep them off, and their company should be liable. Of course that would be ridiculous, but it is only the logical result of the present construction of the act.

A Side View of the Madrid-Zaragossa-Alicante Railway Station at the National Capital of Spain.

It is not denied that it is advisable that all movements by rail should be conducted with such equipment that emergency stops may be made readily; but it does not follow from that fact that the law requires coupling of air on short cuts of cars moving only a few hundred feet at slow speed, where the requirement could accomplish no possible good. The solicitude of some of the judges would seem to be uncalled for since the liability that the law imposes upon railways for damages and injuries always has been and is still a very powerful incentive for them to take all proper and reasonable precautions.

If the force of the act were to be removed suddenly it is probable that most yard movements covering considerable distances or conducted with any degree of speed would still be carried on under air. The good sense of the railway managements would insure the continued use of air where it would do any good. Neither the necessity nor the wisdom of the interpretation of the act now in force is evident.

In their solicitude to protect trainmen from collisions, the courts have overlooked the added dangers which they have imposed upon the car men who must go between the cars to couple air hoses. There is a degree of regularity to train movements. When a train is made up it stands while the air is coupled. On the other hand it is the common experience to find that drags are never completed. In large yards, new cars are being added to the ends even up to the moment of departure. Under these conditions car men must, in compliance with the holding of the courts, go between the cars to couple air hose.

The requirements as to the coupling of air in terminals are being enlarged constantly. Many roads are beginning to feel the burden acutely. The present view of the law makes any continuous movement, even with one car, for however short a distance and however slowly, a train within the meaning of the act. If the present rate of prosecutions continues it will be only a short time until the burden becomes intolerable. Corrective legislation may be the solution, but the difficulty certain to be encountered in obtaining it renders it a matter of last resort.

Although the Supreme Court twice has affirmed the present holding, it is not clear that it would be too late yet, upon a proper showing of the law, to obtain an opinion that would greatly limit the scope of the requirement now imposed. The present state of the law is not the product of congress. It is the growth of an erroneous impression conceived by the courts. It is exclusively the product of the last two decades, and has gone far afield from the design of the act as passed by congress.

Federal government of Brazil has purchased three railways, the Machado, Transpontana and S. Goncalo do Sapucahy, for 2,700,000 milreis ($322,920), 1,530,000 milreis ($182,988), and 600,000 milreis ($71,760), respectively, and will incorporate them in the Southern Minas Railway System.

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Little Stories About Big Men

Charles H. Markham
Chairman of the Board, Illinois Central.

TACT AND perseverance, said the indomitable Disraeli, are the two great qualities most valuable for men who expect to get up in the world. Especially is this true, said he, for those who have to step out of the crowd. Here you have the program for a lifetime. Of course, tact and perseverance imply the possession of patience and the ability to think, qualities much praised down the years of history, constantly encountered in the stories of big men who have left their impress unforgettably behind them.

You don't have to be a rough and tumble, hard-boiled fighter to achieve high ends. It was the gentle Franklin who declared that the patient man can have what he will. Nothing can keep him down. The greatest mathematician of the modern world, Sir Isaac Newton, said that what he had done was due entirely to patient thought. Every time you get a really big man to tell you about his climb from obscurity to success you hear about this business of thinking. Indeed we hear so much about it that it is not difficult to realize that what the world needs today, just as it always has needed it, is careful thinking—men who plan their lives, look ahead, figure on the future, everlastingly watching for Opportunity.

When you study carefully the life-record of Charles H. Markham you find that he came "out of the crowd," that is to say, he started his earning career with no influence outside of himself to help in his march up the grade. This record shows, too, that he was and is a constructive thinker, looking far ahead to the Big Day which always he hoped would come for him. A man of infinite patience.

It is doubtful whether any railroad employe, even in dreams, ever imagines himself president of the company. Such a vision, most of us will admit, would be a bit nightmarish; but the intelligent, energetic, ambitious youngster in station, train or track work does fancy himself getting promotion to the next higher job, without any very definite idea about what may lie just beyond. One operator hopes to be a dispatcher some day, if his mind runs toward the strictly operating side of the business, while another has his eyes on the agent's job, the traveling auditor's portfolio, and eventually, if he be a good planner, hopes to become general freight agent.

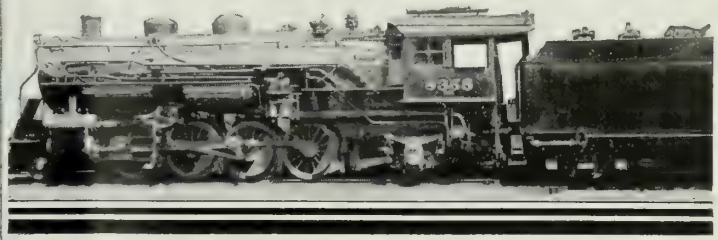
Charles Henry Markham started his railroading on the Santa Fe, at Dodge City, Kansas, in 1881, as a section hand. He was 20 years old then. Those were Bat Masterson days at Dodge, days of big herds, wild days and wilder nights; Bat and Boot Hill, and the doleful Lament of the cowpuncher:

Take me to Boot Hill and throw the sod o'er me,
For I'm a poor cowboy, and I know I've done wrong.

Ten to one Charles Henry could tell you some stirring tales of those days, although a section man's wages in the 80's, a dollar ten, were not enough to support profligate living. Then, too, Charles Henry worked hard, so hard that when night came his bed must have held far more attraction for him than the saloon-lined main street, saloons and faro, the "old army game" and roulette. There were no motor cars for track-workers in those days, remember. When a man helped to pump a car

4 functions OF THE LOCOMOTIVE WATER CONDITIONER

An engine equipped with the Locomotive Water Conditioner. The exhaust steam piping to the tender and the steam turbine-driven pump under the cab are inconspicuous. Note the absence of changes or bulky equipment.



. . . . an open type feed water heater on the tender—efficient, simple and easy to install.

. . . . ample hot water storage for intermittent operation and insurance against cold water entering the boiler.

. . . . a large hot water surface vented to the atmosphere, allowing oxygen to be driven out.

. . . . a hot water compartment where treatment may be given under the most favorable conditions and from which precipitated scale forming ingredients may be sludged out at terminals.

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2 HOT WATER STORAGE

3 OXYGEN REMOVAL

4 WATER TREATMENT

THE manufacture, supply and serviceof boiler water treatment chemicals is the primary business of The Bird-Archer Company.

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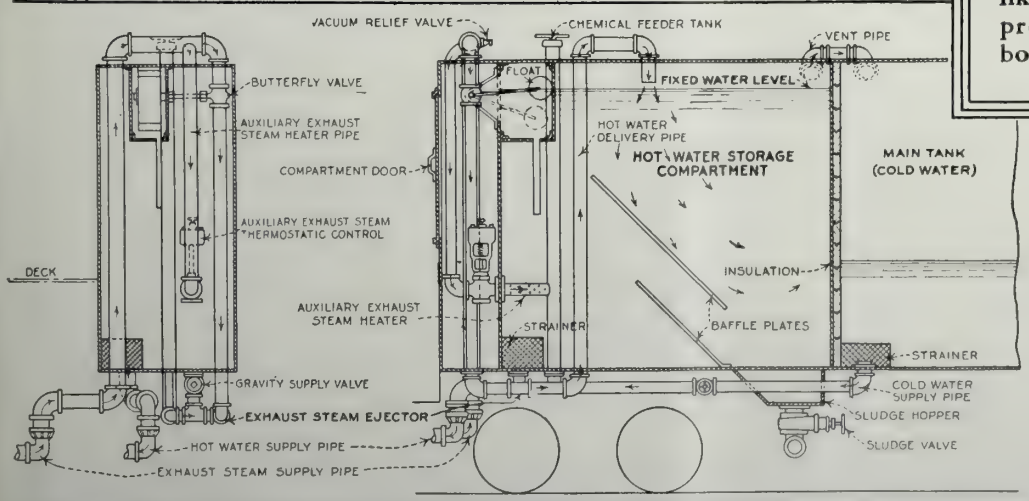


Sectional view showing Type B Conditioner installed in one leg of tender

five or six miles over a section, cut weeds that were dry, and hard as nails, tamped ties with the handle of a shovel, and then pumped his way back to town at night, supper and sleep were his only thought, except, perhaps, at the end of the month when Jim Moore came along with the pay car, provided someone hadn't slipped over a garnishee. How would the gang have felt and acted if Fate had served notice that one of its members was to be president of the Illinois Central and then chairman of the board!

CHARLES Henry came into the West over a circuitous route, from Clarkesville, in Montgomery County, Tennessee, where he was born in May, 1861, to Addison, in Steuben County, N. Y., where his parents had moved; a small town boy with just a smattering of public school education, but a grim determination to make a career for himself. Like Jim Hill who built the Great Northern, Charlie Markham got a part-time job in a grocery store —Root's grocery—and, just to keep himself fully occupied, took on also the responsibilities of night watchman for the town bank; that is to say he slept in the bank, a fact which, being widely known, was presumed to assure the institution the protection any self-respecting financial outfit must have. Obviously, no burglar would run the risk of burgling a bank in which an 18-year-old boy was sleeping as lightly as only a boy does sleep.

These, and other jobs to be found in and about Addison didn't seem to be getting young Markham anywhere. Other boys with vastly better prospects than his seemed to be in the same frame of mind, particularly two sons of what were then classed as wealthy families; no outlook, nothing worth while to do; no chance even of some day owning Root's grocery. How is it, any way, that these stodgy old chaps in small towns become owners of groceries? A trip to the West was indicated, out where men are men and the spaces are said to be wide open.

So the three of them started. At Kansas City the two sons of wealth turned back. It looked like a hard time for them. Markham got work in a packing house. What he did there is not part of the record, unfortunately, but the chances are that he objected to the atmosphere of Armourdale, never anything much to brag about, if you ask us who have paled at its touch. At all events the next his mother heard of him he was driving mules in a railroad construction gang down in New Mexico, forty miles from a postoffice, and he wanted mother to send him needles and thread so he could mend his clothes.

As a mule whacker, Markham must have been a success. Doubtless, also, he picked up some language useful to him in later life as a railroader, hardening his muscles as the days went by. Anyway, he was promoted to a steady job on the section at Dodge City. If he didn't like this work he at least learned the fundamentals of maintenance of way, an extremely useful part of his education. Just how long he stayed there is not disclosed, but after a while he left the Santa Fe to favor the Southern Pacific with his services as a train butcher, a bit of a title not necessary to explain here. In the course of time, as happens on all railroads, even the S.P., his train was late one day, so late that Markham had to double back from Deming. In making this shift for the first time the young man went to the station and there was astonished to find as agent A. D. Shepard, formerly a friend in Addison, his faraway home in New York state.

After a long talk over home affairs, calling the roll of the absent friends, Shepard offered Markham a job shoveling coal into engine tenders, for there were no patent coal dumpers then as now—how all these railroad jobs have softened! He slept in the freight house, one of Deming's solid merchants giving him credit for some blankets, an act the storekeeper never had to regret although he went into the transaction with some misgiving, as afterward he admitted.

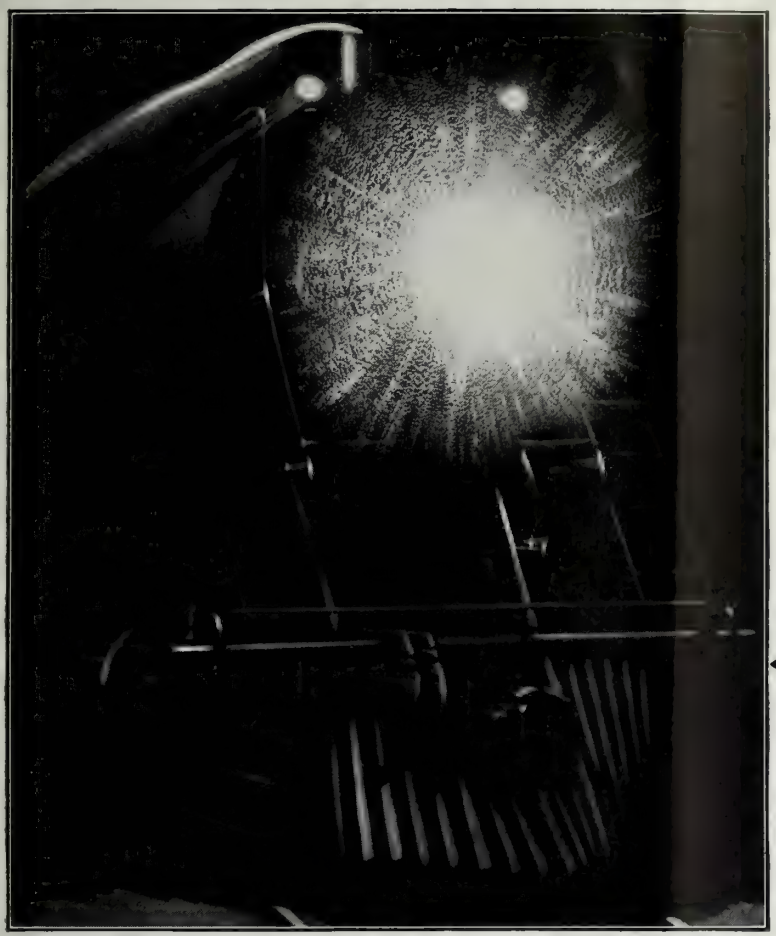
YOUNG Markham was baggage master and janitor at 22 in the station at Deming. Just what he was going to do with his life did not at that time seem very clear. He certainly had conceived no plan, but he did read, and study the job of the man ahead of him. He had no thought of getting to the top, as some men very naively declare they had in their youth, a story which, in our private opinion is mostly hooey. But he did want the next job ahead of him, and that is a mighty good policy to pursue, because if you just keep moving along you'll drop into something worth while some day. Markham moved. He got first one thing and then another, each a little better, until finally when he was 25 or 26 he was appointed agent at Lordsburg, N.M., at about a hundred dollars a month, a whale of a salary in those days. Somewhere in here, he never has told us just when, but somewhere about 1884 when he was only 23, according to the imperishable archives, he married Anna E. Smith at Louisville, Illinois. This is an interesting and important chapter because in the years of station work between shoveling coal at Deming and handling fruit shipments at Fresno, we find, quite unexpectedly, casual mention of a wife who encouraged his ambition to find a place in California. They talked, these two, about a future on the Pacific Coast in some town where they might have grass and chickens and things. Between the dusty days of Lordsburg and the end of the next ten years or so they talked and talked about California, and finally they landed there—at Fresno.

It may sound stereotyped; we've said it before, and we say it again: Every time we meet a successful man, one who came, literally, up from the soil, we know that he was singled out for promotion because he had done something to attract the attention of those above him, because he had gone about the business of preparing himself for a better job. No other kind ever gets up in the world.

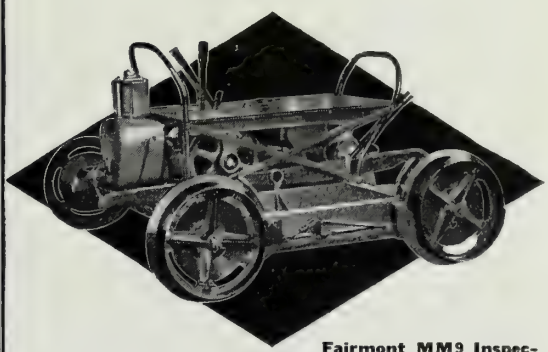
It was at Fresno that Markham saw his chance, and was ready. Up to that time his promotions had been unimportant. He had had charge of stations along the Southern Pacific where no great competition existed. All he had had to do was the usual round of duties handled by every other agent. At Fresno he found himself in swift company where things moved in car loads and trains, raisins, wine—them was the days—and practically all such traffic was long-haul stuff well worth striving for among the solicitors. Markham was no salesman. He didn't like the ethics, or what he believed to be the ethics of salesmanship, an attitude prompted, doubtless, by things he had heard about real estate hustlers.

But he changed his mind at Fresno. It was his duty to do something out of the ordinary to get for his company more of the traffic then being taken by its competitors. The obvious thing, therefore, was to call on the shippers and tell them about the service his line could give. Business men don't ignore that kind of agent. Not for very long. That kind of agent won't let himself be ignored. This particular agent, and he was very particular, began looking about for ideas, not an easy thing to find at any time. But he found one. It had to do with proper car loading. This story has been told so often that perhaps it may be well to have it this time from the original source. Talking about it,

DEPENDABILITY



"On Time"—that phrase was born in the faithful, never-failing performance of the Railroads, which maintain—on hundreds of thousand miles of track—schedules computed in minutes, even in seconds!



Fairmont MM9 Inspection Car
Water Cooled for 1 or 2 men. Other models include: CI—Air Cooled for 1 or 2 men, and M19—Spring Mounted for 1 to 4 men

To protect the reputation for dependability that it enjoys, the Railroad World must be certain of the performance of every factor—human and material—that enters into its service. In no department is this so clearly seen as in maintenance and right of way, where Fairmont equipment is fast becoming the standard.

Dependability, when applied to Fairmont Motor Cars, has a double meaning. It means continuous, never-failing service and also *lowest over-all cost* service. This is not an idle claim, but a matter on record in thousands of railroad offices, and in the fact that *more than half the motor cars now in service are Fairmont products.*

FAIRMONT RAILWAY MOTORS, INC.
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FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles, and safety appliances

Fairmont Mudge
Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT

long ago, to some friends Mr. Markham smiled.

"We needed a dozen cars for that shipment but only eight had come. The morning the men started loading the wine I noticed that, following the method then used, about one-half the space was wasted. Up to that time one layer of casks had been put across the bottom of the car; the remaining upper part, half the total space, was left vacant. It had been generally conceded that if another layer of barrels was put on top of the first, they would be knocked about and the wine spilled. I discovered that a second layer of casks would leave plenty of margin under the weight capacity of the car. My next movement was to call over some carpenters who were repairing the station platform. I put the matter up to them, and they laid a shelf over the first layer of casks and then as the second layer was put on, built braces about the casks, making them perfectly safe. Before noon, we had the wine securely loaded in six cars and two empties to spare.

"That afternoon, the general manager of the road, Julius Kruttschnitt, came into Fresno unannounced.

" 'This is the sort of work that needs very much to be done all over the system,' he told me. 'I wish you would look into some other phases of it. Take wheat for example, and see where we are wasting car space on that.' "

WHAT Mr. Markham did for the Southern Pacific with wheat shipments out of California resulted in using 99 per cent of a car's capacity instead of 66; and then he had to apply the rule to other commodities. He must have done good work because he was general freight and passenger agent of the company's Oregon lines in 1897 at Portland, and stayed there until 1901 when he was called to San Francisco as assistant freight traffic manager. This post seems to have been merely an interlude because he occupied it only three months before going to Texas as vice president of the Houston & Texas Central. This place Mr. Markham kept for three years and then moved on to become vice president and general manager of the Southern Pacific at San Francisco.

At this point came a break. Mr. Markham resigned to become general manager of the Guffey Petroleum Co., at Beaumont, Texas, in which capacity he remained for about five years, until 1909, when he became president of the Gulf Refining Co. and the Gulf Pipe Line Co., of Pittsburgh. He was elected president of the Illinois Central January 12, 1911.

There are a few other titles in this period; he was president of a steamship company and chairman of one line or another, but this is no chronological report. The interesting fact is that the World War created new duties for Mr. Markham, as it did for many others. The railways, taken by the government, were made into seven regional divisions to one of which he was assigned as director, the Southern, then to the Allegheny region until September 30, 1919, and finally back to the Illinois Central as president. He retired from that position in September, 1926, to become chairman of the board.

THERE are some capital stories about this man who rose in four or five years from a station agency to be the executive head of the S. P. All of them show that the man who gets ahead in the world must depend not only on his own ability but on the presence and the keen power of observation of some one above him in authority. There are many executives in the railroad business, as in other businesses, who have keen eyes only for mistakes. The officers competent to select good material for advancement are not so numerous as they ought to be for the good of the companies employing them. Whenever you discover that you are working for that kind of man there is only one wise thing to do: quit.

Charles Markham once said that for more than 20 years he never did know just how he had escaped from overalls. "And then," said he, "the day I became general manager of the Southern Pacific I went to the Old Pacific Union Club in San Francisco for luncheon and while there met E. F. Gerald, a former chief traveling auditor for the road. I heard him tell a mutual friend the secret of what had puzzled me so long.

" 'Did I ever tell you about the first time I saw Markham?' he asked our friend, throwing his arm around my shoulders. 'I'm not sure that he ever heard himself. It was down at Deming. I was sitting in a business car in front of the station one morning when he came out in a blue shirt and overalls and swept off the station platform. Something in the way he went about it caught my eye. He didn't miss any dirt or waste any licks. He handled it like a brisk piece of engineering. The assistant general manager, Mr. Pratt, was with me and I called his attention to the way that the sweeping was being done. I told him I believed that fellow would bear watching. You know all of us from headquarters are more or less scouts for good material.

" 'Well, Markham, we did watch you,' continued Gerald. 'We had you tried out for a while on some work in the station office, and eventually, as a result of it all, you were given your first station agency at Lordsburg.' "

A WRITER in Tennessee, Hazel Manley, tells a story showing how Mr. Markham's attention to things overlooked by many persons has helped him along in the world. He was always careful and thorough about small jobs, little things, but above all he kept his eyes open which, figuratively, many men do not do.

A party of investment bankers from New York went down to the Fresno Valley accompanied by one of the general officers of the road. Their mission was to look over the grape country, says Miss Manley, so they took the new branch line from Fresno through the valley. Markham and the division superintendent were annexed to the party at Fresno as "speilers." While they were passing a place called Barton's Vineyard, something went wrong with the engine and everybody got off the train to enjoy the sunshine.

As they walked along, one of the bankers turned to Mr. Markham and asked. "How old is this vineyard?"

"Twelve years," he replied promptly. Right there the general officer interrupted him.

"How do you get on to such things Charley?" he asked.

"There it is," said Markham, and he pointed to a sign over the gate. The sign read. "Barton's Vineyard, 1882."

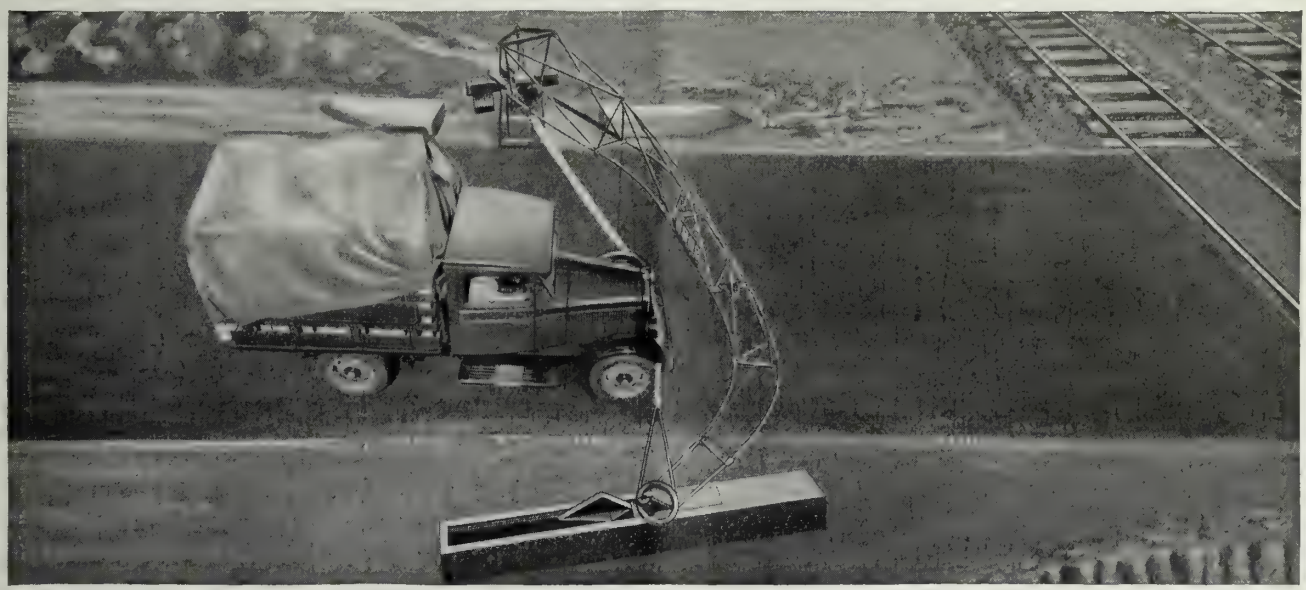
A TRAIN of business cars was running along one day several years ago through New York state. There were several railroad presidents aboard. One of these, gazing at the swiftly disappearing scenery suddenly sat up and exclaiming, "There's Baldwin's cemetery. This is Addison. I lived here when I was a boy. There's the old grist mill where my gang and I used to go swimming!"

Armstrong Perry, who told the story, says the train was stopped. As it slowed down Charles Markham said to another president:

"I'll bet I can find my name in the freight house where I painted it with the marking brush and ink fifty years ago."

They went into the old station to find it. There were many names

SAFETY
At Greatly Reduced Cost Per Crossing



THE HIGHWAY GUARDIAN

THE development of THE HIGHWAY GUARDIAN throws a new light on grade crossing protection. It is a pioneering effort to combat the high cost of eliminating crossings.

Grade separation has always made it necessary to fit railroads, highways and nearby property to suit the protective requirements. This takes a lot of time and is extremely costly. It often means elevation of roadbeds or changes in highway grades as well as alterations to nearby property.

THE HIGHWAY GUARDIAN leaves grades and property unchanged. It fits-in with conditions as they exist today. Its installation is quick, simple and costs are but a fraction of the expenditure needed for a grade separation.

With over 27,000,000 vehicles traveling the highways---40 to every mile of finished road---protection is needed now. THE HIGHWAY GUARDIAN meets today's requirements at the lowest cost per crossing.

Write for details of operation, construction and installation.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

printed on the wall with marking ink, but the one they were looking for had disappeared. In making repairs some workman had removed the board on which it was painted. Maybe someone had carried it away for a souvenir, for the name of the boy of a half-century before had become well known throughout the nation.

Markham was living the dream he and every other man has had at some time — the dream in which he should some day go back to the old home, famous and pretty well off in this world's goods — the town from which he had gone out to the West for fame and fortune. Eagerly he looked for the little house in "the patch," beside the Erie tracks in the poorest part of town, where he had lived with his widowed mother. It had disappeared, along with all its neighbors, wiped out in the march of progress. He went down to the old grist mill. Changes there, too. The swimming hole in the tail race was still there. But the gang! What had become of it?

Alec Spencer of London Was There

One of the prominent guests at the recent Atlantic City conventions was Alec Spencer of London. He came to the states to assist in introducing in this country Spencer - Moulton rubber for use in car trucks, draft gear, etc. Mr. Spencer, who is 71 years young, is an enthusiastic golfer and a nine handicap man. He was at one time captain of the Black Heath Golf Club, the first playing club in Great Britain, and shot golf six years before the first ball was ever teed-up in the United States. He is chairman of Spencer-Moulton and vice chairman of both the Superheater Company, Ltd., and the Metropolitan Carriage & Wagon Company.

Mr. Spencer says that Spencer-Moulton rubber springs have many applications to truck construction, and that their success depends entirely on the question of design and the quality of the material. The rubber used in their construction is made to a special formula applied in 1853 by his father. Spencer-Moulton springs are in extensive use on English and Colonial railroads and in some instances have been standard for over half a century.

The product is being introduced in this country by the Waugh Equipment Company under the personal supervision of A. J. Pizzini, the president of the company, who is shown in the accompanying picture with Mr. Spencer.

A. J. Pizzini, President, Waugh Equipment Co., and Alec Spencer of London.

New Way to Tax Cars

A formula for levying taxes on automobiles in such a way that each vehicle will pay a tax in proportion to the amount of wear it causes on the road has been developed by Charles F. Marvin, Jr., mechanical engineer of the bureau of standards, department of commerce, according to a statement June 18 by the department of agriculture.

Three principal factors are given consideration in the formula, the department said. These are the weight of the vehicle, the distance traveled during the taxable period, and the kind of tires used, solid or pneumatic. The heaviest vehicle traveling the greatest distance and using solid tires would pay the largest tax. The formula is sufficiently flexible for use in any state, the department said.

New Idea Anyway

Suit for $200,000 damages has been filed in Fulton superior court at Atlanta by W. H. Adams, former railroad engineer, against the Atlanta, Birmingham & Coast Railroad and a number of officials of the railroad.

The plaintiff charges the defendants with a conspiracy to deprive him of his job as an engineer and as an employe of the railroad and alleges that the defendants discharged him in an effort to conceal alleged violations of the state laws of Alabama and Georgia and the regulations of the company.

Adams alleges that the defendants jeopardized his liberty and suffrage as a citizen by promoting him to engineer after he had served only three months as a fireman, while the state law requires three years' service as a fireman before a man can serve as engineer of a locomotive. Adams contends that he was ignorant of the provisions of the law until after he had been discharged. The plaintiff says that he was embarrassed, humiliated and held up to ridicule and scorn through alleged carelessness and negligence of the defendants.

C. P. R. Extension

Engineers of the Canadian Pacific Railway opened in May the new Willingdon-Vegreville branch. Although but 25 miles in length, this line taps a fertile traffic-producing territory, and joins with the Lloydminister-Edmonton branch in serving the growing Alberta-Saskatchewan boundary district. The new line will act as a feeder line in serving a large territory, which is fast settling with homesteaders, and is destined to become a mixed farming country.

Class I railroads in 1929 spent $1,329,535,000 for fuel, materials and supplies, the Bureau of Railway Economics reports. This was an increase of $58,194,000 or 4.6 per cent above similar expenditures made in 1928.

AUTOMATIC

TO do automatically that which human hands previously did has been proven again and again to be *Economy* of a very real and satisfying kind.

The ROBINSON CONNECTOR is *Entirely Automatic*. Among its benefits and economies are:

1—Speeds terminal operation. Upon this depends the effectiveness of large investments.

2—Reduces road delays.

3—Greatly prolongs the life of hose and minimizes Train Line Maintenance.

4—Reduces "break-in-two's" due to frequent bursting of hose. "Break-in-two's" damage equipment and often cause derailments and collisions.

5—Improves brake operation, and hence gives better control of train.

6—Reduces brake shoe wear and "creepy" brakes.

7—Reduces triple valve maintenance costs by providing a cleaner train line.

8—Saves the fuel now wasted (the figure is amazingly large) in pumping against train line leakage.

9—Increases car miles by speeding up the movement of trains, and hence reduces new car requirements.

10—Increases tonnage where brake control is the determining factor.

11—Reduces personal injuries by keeping men from between cars.

12—SAVES TIME—now the chief element in transportation.

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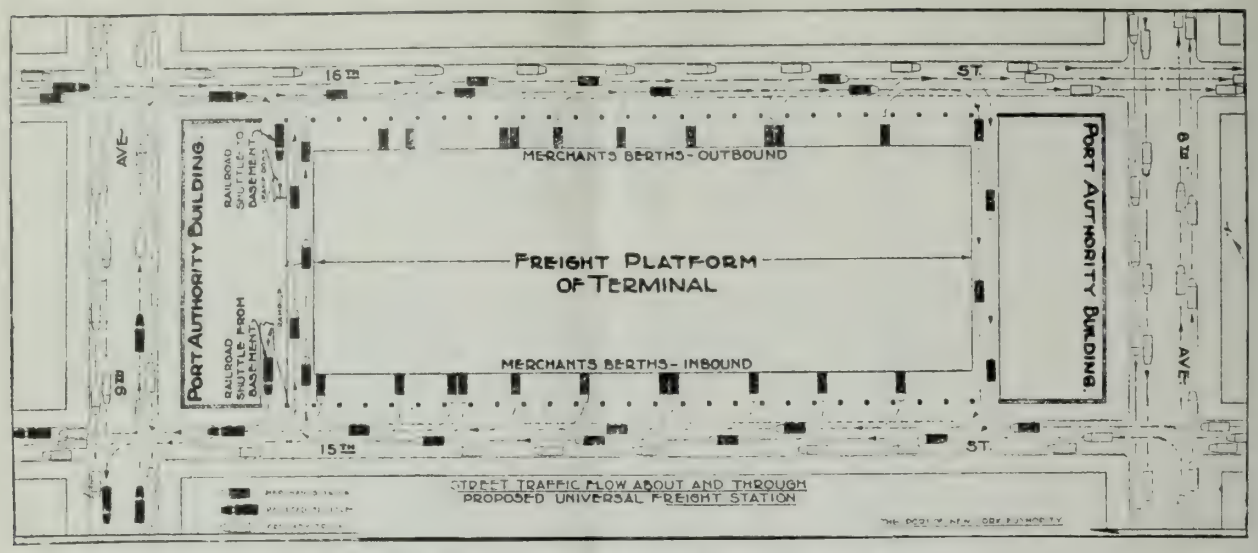
"Building Automatic Connectors is our exclusive business"



Floor Arrangement of New York City's Inland Freight Terminal.

The News of the Month

What's Been Going on in Transportation, Railroads, Automotive, Supply, Aviation

CLASS I ROADS of the United States in 1929 spent $1,329,535,000 for fuel, materials and supplies, the Bureau of Railway Economics announced June 16. This was an increase of $58,194,000 or 4.6 per cent above similar expenditures made in 1928.

This figure as to the amount of purchases made by the railroads during the past year covers only such items as were directly bought and paid for by the railroad companies. In addition, however, the railroads are indirect purchasers of many commodities, large quantities of which go into railway equipment and into new construction that is contracted for under lump sum agreements and not classified under the head of direct purchases.

"While freight traffic," said a bulletin issued by the Bureau of Railway Economics, "for 1929 was the greatest for any year on record, comparisons show that the amount of railway purchases was less than for any corresponding period in the past seven years with the exception of 1928. This decline resulted in part from greater efficiency and economy in the utilization of material by the railways; in part from a gradual decline in railway inventories of material and supplies on hand; in part from lowered price levels of certain of the commodities purchased. To the extent that the railways have speeded up their own freight deliveries and have installed improved methods of purchase, storage, and utilization, they have themselves benefited from their increase in general operating efficiency.

"Tabulation of reports submitted by Class I railroads shows they are among the largest buyers of the nation's production of the principal materials, the rail carriers having in 1929 purchased 23 per cent of the bituminous coal output, 19.2 per cent of the production of oil processed for fuel purposes, while they bought directly or indirectly more than 20 per cent of the timber cut, and 17 per cent of the total production of the iron and steel products.

"Total railway expenditures for fuel during 1929 amounted to $364,392,000, a reduction of $20,216,000 or 5.3 per cent under 1928. Bituminous coal cost the railways $287,999,000 in 1929; anthracite, $8,372,000, and fuel oil, $62,132,000.

"In terms of physical units the railways in 1929 purchased 120,730,000 net tons of bituminous coal; 3,174,000 net tons of anthracite coal, and 3,004,120,000 gallons of fuel oil.

"Direct purchases of forest products in 1929 amounted to $157,551,000, a decrease of $3,243,000 or two per cent under 1928. Cross ties purchased in 1929 amounted to $83,421,000, there having been a decrease of nearly 11 per cent in the number of ties purchased during the past year compared with 1928.

"For iron and steel products, there was an outlay by the railroads of $437,840,000, an increase of $40,296,000, or 10 per cent above the amount spent for that purpose in 1928.

"Steel rail purchases in 1929 amounted to $94,195,000. The cost of wheels, axles and tires in 1929 amounted to $41,269,000. Purchases of frogs, switches, crossings, track fastenings, bolts, and spikes in 1929 aggregated $70,971,000. The outlay for bridges, turn tables, structural steel and the like amounted to $57,330,000.

"Railway purchases of steel rail in 1929 aggregated 2,138,000 gross tons. This represents a larger tonnage than in 1928 by 2.8 per cent.

"Estimates place the railway use and consumption of the total iron and steel production of the United States at 17 per cent in 1929. This 17 per cent represents approximately 6,895,000 gross tons.

"Material stocks held by Class I railways on the last day of both 1928 and 1929 approximated $471,000,000, the lowest inventory of any corresponding date during the past ten years."

New York City's Inland Terminal

Ten leading eastern railroads are cooperating with municipal authorities of New York in erecting a model inland freight terminal in the commercial heart of the large city at a cost of $15,000,000. The structure, to cover a city block between Eighth and Ninth avenues from Fifteenth to Sixteenth street, is to be erected under the supervision of engineers of the Port of New York Authority.

The new terminal will be after the

fashion of those in St. Louis and Cincinnati. The need of the metropolis, due to the barriers of water around Manhattan Island, is greater than that of any other city. If the experiment proves as successful as transportation engineers have reason to believe, other similar inland terminals will be erected in various parts of the city to care for traffic in the immediate vicinity. The railroads cooperating in the venture are: Pennsylvania, Erie, Baltimore & Ohio, Central of New Jersey, Delaware, Lackawanna & Western, Lehigh Valley, New York Central, the New Haven System, New York, Ontario & Western, and the Long Island.

The centralized terminal facilities will eliminate the expensive and wasteful methods involved in trucking and lighterage in handling nonperishables of less than carload lots, the aggregate of which represents a tremendous traffic. Ultimately several piers now used for floats and lighters are to be released for other purposes as the terminal develops.

I. C. C. Authorizes Rate Increase

Railroads operating in western trunk-line territory, which extends west from Lake Michigan to the Rocky Mountains and northward from Kansas and Missouri to the Canadian border, were authorized July 8, to establish, increased rates on classified freight.

The increased annual earnings expected to result from the Interstate Commerce Commission ruling are estimated in railroad circles at $12,000,000.

At the same time, permission was given railroads in eastern territory to institute a new system of class rates applying over the northeast quarter of the United States, which will in general result in increased earnings.

The western trunk-line rate revision will be effective November 1, while the eastern revision will be made effective within four months.

A Lower Net Recorded

Class I railroads in the first four months of 1930 had a net railway operating income of $238,507,532, which was at the annual rate of return of 3.56 per cent on their property investment, according to reports just filed by the carriers with the Bureau of Railway Economics. In the first four months of 1929, their net railway operating income was $353,439,683 or 5.39 per cent on their property investment. This compilation is based on reports from 173 Class I railroads representing a total of 242,469 miles.

Gross operating revenues for the first four months of 1930 totaled $1,783,304,189, compared with $1,996,319,769 for the same period last year, or a reduction of 10.7 per cent. Operating expenses for the first four months of the year amounted to $1,386,713,499 compared with $1,475,466,990 for the same period one year ago, or a reduction of six per cent.

Class I railroads in the first four months of 1930 paid $118,479,946 in taxes, compared with $128,610,077 for the same period the year before. For April alone, the tax bill was $30,094,098, a decrease of $2,925,964 under the previous year.

Thirty-one Class I railroads operated at a loss in the first four months of 1930, of which ten were in the eastern, two in the southern and nineteen in the western district.

Claim Agents at Seattle

The Freight Claim Division of the American Railway Association met at Seattle June 10-13 with J. D. Shields, claim agent of the Burlington, chairman, presiding. More than 400 delegates and their families attended. A luncheon was given, June 13, by the Pacific Northwest Industrial Conference of Portland, Tacoma and Seattle. Louisville, Ky., was selected for the next yearly convention in 1931. A. R. McNutt, freight claim agent of the Union Pacific, was elected chairman; H. J. Freeman, freight claim agent, Pennsylvania Railroad, Philadelphia, first vice president; H. M. Moors, freight claim agent, Southern Pacific at New Orleans, second vice president.

Canal Traffic Lower

Commercial traffic through the Panama Canal in May was the lowest for any month since June, 1927. The daily average of tolls collections also showed a falling off, according to a statement on June 23 by the canal administration. During May, 1930, 479 commercial vessels and 14 small launches passed through the canal. Tolls on the commercial vessels aggregated $2,162,898, and on the launches $111, or a total tolls collection of $2,163,009.

Fruit Shippers Ask Rehearing

Reopening of the California deciduous fruit case for consideration under the provisions of the Interstate Commerce Act without regard to the Hoch-Smith congressional resolution, was urged by the California Growers' and Shippers' Protective League June 24 in a motion filed with the Intestate Commerce Commission for leave to file an amended complaint.

A New Way to Heat Long Trains

The heating of from 12 to 20 passenger cars is a problem that has brought about a change in devices heretofore used. The most notable changes to date are the benefits obtained by changing both connections and couplers to two-inch; but as the restrictions to the flow of steam offered by vapor valves having orifices with an area of one-half inch pipe and inlet valves having approximately the same, the results gained by the increased size of hose connections are nullified.

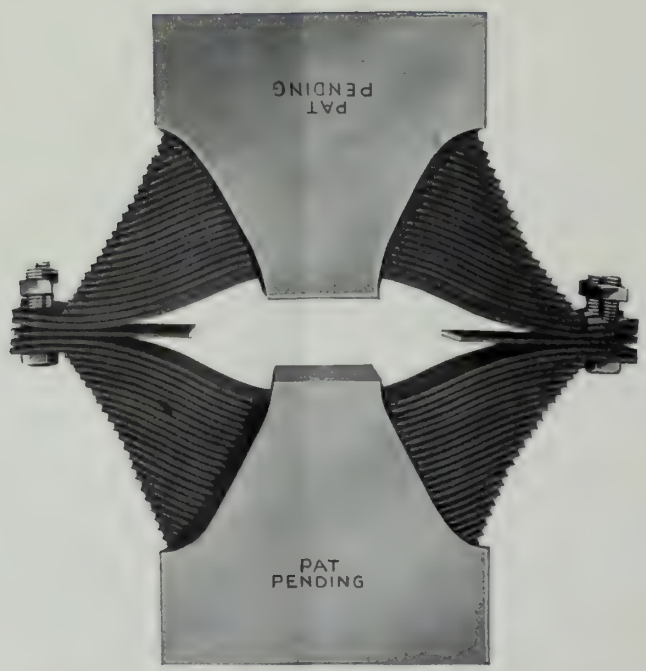
It is well known that the velocity of steam increases as the drop in pressure increases, and also that the volume of steam increases as the area increases, and as most cars are dependent upon vapor as the means of producing heat, it is obvious that the most beneficial results can be obtained only by the elimination of restrictions to the flow of steam, which has been accomplished by the design of a new Vapor Valve or Regulator made by the Gold Car Heating & Lighting Co., of Brooklyn, N. Y.

This Vapor Valve is divided into three compartments—high pressure, low pressure, and exhaust. The high pressure compartment is connected to the train line whence the steam is admitted into the low pressure compartment through an opening or seat having an area of that of 1¼-inch pipe, thence through the radiating circuit to the atmosphere by way of the exhaust compartment. In the exhaust compartment there is a diaphragm valve for controlling the admission of steam into the low pressure compartment. This diaphragm is an accordion shaped bellows made by collapsing dies that form each convolution without expanding the metal, producing a bellows having the same thickness of metal throughout its entire length. The natural resilience of this diaphragm or bellows, is ⅝ of an inch, which, of course, means that it can expand ⅝ of an inch without distorting its convolutions. As we require but one quarter of an inch motion, this type of bellows gives assurance that it will not become inactive through metallic fatigue. As this vapor valve is connected below the train line, the water of condensation will drain into the low pressure compartment where we have arranged a diaphragm valve that will close at vapor temperature and open at slightly below vapor temperature — exhausting condensation that collects in this chamber. This compartment or chamber is never subject to any pressure, therefore this valve is never required to function under any other temperature than that of vapor or 212° F.

A full and more comprehensive description of this new system and other devices to which it is related may be obtained for the asking by addressing the Gold Car Heating & Lighting Co. at Brooklyn, N. Y.

DO YOU REALLY WANT A

ALL RIGHT HERE IT IS—



THE GOODWIN SUPERGEAR

Is the result of nearly 40 years of service and development in the draft gear field.

BETTER DRAFT GEAR???

→ THE GOODWIN SUPERGEAR!

NEW—REVOLUTIONARY

AND HOW IT WILL PROTECT YOUR CARS AND LADING!

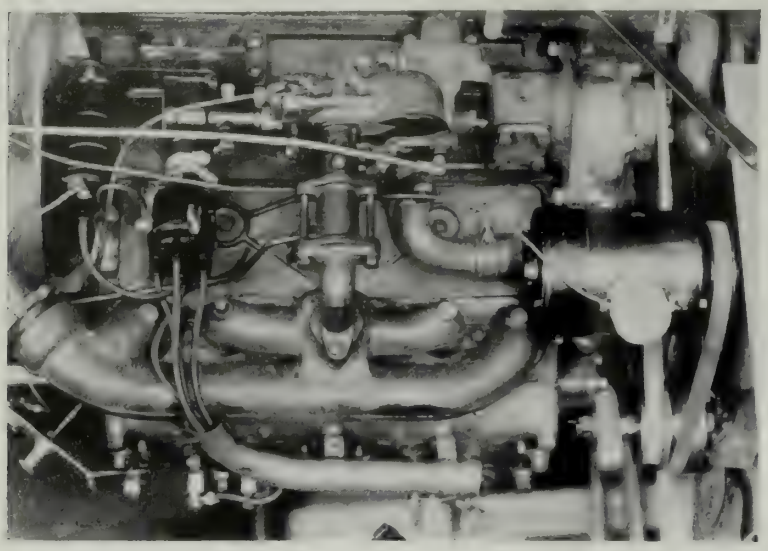
FRICTION AREA 130 SQ. FEET
NO STICKING

NO LUBRICATION
NO MAINTANANCE

FIND OUT ABOUT THE SIMPLEST AND MOST ASTONISHING THING IN DRAFT GEAR DEVELOPMENT

STANDARD COUPLER CO.

NEW YORK CHICAGO



New High-Output Electric Generator Installation for Fairmont A5 Cars.

Improvements on Fairmont A5 Car

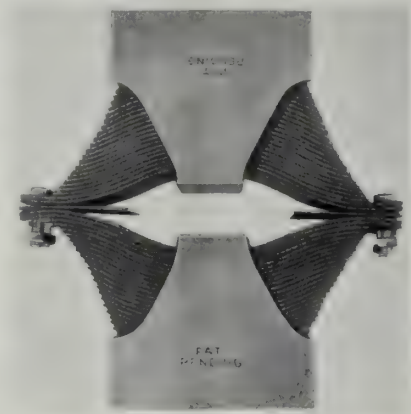
Fairmont Railway Motors, Inc., of Fairmont, Minn., now offers a new electric starting, lighting, and ignition system for its A5 large extra gang car. The A5 car has a 4-cylinder 33 h.p. Continental engine and 3-speed reversible transmission. Formerly the generator ran at engine speed, coupled to the pump shaft. The new Autolite generator is belt-driven, and has a much higher maximum charging rate, which is needed where the car is operated most of the time at slow speed, as in hump yards. The charging rate is now easily set anywhere between 18 amperes and 2 amperes, adapting the installation to any class of service. Even when idling, or running only 12 miles an hour, 12 to 14 amperes can be developed. This large current supply makes it possible to use both headlights to light emergency night jobs, by idling the engine with the car standing.

Another improvement is the brake lock which holds the car stationary when the lever is hooked back. Fairmont bolted hubs greatly facilitate renewal of worn drive wheels on the A5. To provide for unusually severe conditions, Fairmont has developed drop forged 7/16-inch manganese steel tires which are more economical due to their much longer service.

A New Super-Gear

Since the Purdue draft gear tests many changes and new types of gears have been announced by the manufacturers. The latest of these is the new Goodwin leaf friction "Super-Gear" shown for the first time at the recent Atlantic City conventions by the Standard Coupler Co., of New York, a firm which has been engaged in the draft gear business for the last 30 years.

There are two types of the "Super-Gear," Models A and B. The "A" gear, designed for use on modern equipment, has a 24⅝ inch pocket length, a 2¾ inch travel, a yoke width of 9⅛ inches, and a capacity of 18,000 foot pounds. It weighs 675 lbs., has a friction area of 100 square feet, and better than a



New Goodwin Leaf Friction Draft Gear.

60 per cent absorption. With this gear no followers are required. To illustrate its sturdiness, the minimum cross sectional area is 36 square inches. It is said this gear simply cannot stick, and is unusually responsive in its action, requiring no lubrication.

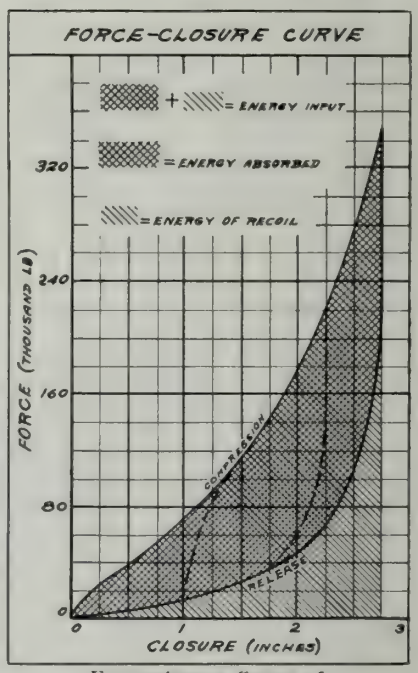
The "B" gear is similar to the "A" gear, except that it has a 29⅛ inch pocket length, weighs 825 lbs., has a friction area of 130 square feet, and a capacity of 24,000 foot lbs. It is designed for exceptionally heavy equipment such as large locomotive tenders or 120-ton coal cars.

This radically new application of an old principle is being introduced only for use on new equipment as it necessitates slotting of the center sills.

The gear is extremely simple in its construction, consisting of a series of semi-elliptic springs of exceptionally high capacity. These are so shaped on the ends that they will hold in place permanently any leaf or leaves that might happen to break. This prevents any undue strain on the other leaves; further, the broken leaves will continue to function almost as efficiently as if there had been no breakage.

Because of the large friction areas and low unit pressures this type of gear will show very little wear and, it is declared, will outlast the life of the car.

The force-closure curve of the Type



Force-closure Curve of Type A Gear

"A" gear shown herewith, indicates the capacity and smooth, uniform action secured by this gear. To prevent frequent over-solid blows and corresponding shock to the car and lading, the spring is designed to offer gradually increasing resistance per unit of travel and, by the resulting high ultimate capacity, to eliminate over-solid blows except at excessive striking speeds.

Keeping Out Flies and Cinders

Screens in car windows add much to the comfort of passengers by excluding dirt and insect pests, but the excessive cost of maintaining ordinary wood-frame screens often prevents their use. Recent improvements to steel framed screens eliminates the high maintenance cost and make them easier to use. The Regal Screen manufactured by Tuco Products Corporation, 30 Church street, New York, is of steel or bronze with

1903 1930

AN UNBROKEN RECORD OF TWENTY-SEVEN YEARS

VAPOR Products

VAPOR SYSTEM

Always one step ahead—

Developing improvements in Car Heating Equipment which effect real economies in maintenance and operation, and provide for constantly increased comfort of passengers.

An enviable reputation established—

Rendering continuous Engineering Service.

No. 238
Reducing Valve

No. 1106
End Valve

No. 310
Coupler

No. 1136
Metallic Conduit

The latest and most efficient two-inch equipment for long passenger trains

VAPOR CAR HEATING CO. Inc.
RAILWAY EXCHANGE, CHICAGO, ILLINOIS

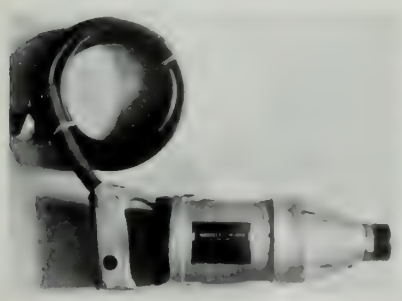
CAR HEATING SPECIALTIES FURNISHED BY CAR HEATING SPECIALISTS

one-inch stiles and rails welded together, giving maximum vision. An adjustable end shoe under spring tension automatically compensates for varying window widths and makes insertion of the screen under the window sash a very easy operation. The rigid finger hold at the opposite end facilitates handling. Renewable weather strips slip into grooves in the top and bottom rails. Wire cloth is firmly held in the frames by split beading. All steel parts are covered with a baked enamel finish, preventing corrosion.

These Regal Screens are made in any width and height desired and can be supplied with or without hinged or removable deflectors. They are easily inserted and removed from the window frames, stack perfectly and can be stored in small space. Renewal of weather strips requires less than 10 seconds to the screen. Renewal of wire cloth is a simple operation with the use of the split beading.

The Brill Multi-Tool

A portable electric hand tool known as the Brill Multi-tool "for multidudinous purposes" is now offered by the J. G. Brill Co. The principal thought behind this new development is economy in equipping shops, one power unit being arranged for an unusual number of attachments. It particularly lends itself to systematic tool crib distribution of attachments. It has a place in manufacturing and maintenance of all kinds, and is particularly adapted to the transportation field. More than 15 major operations and almost unlimited minor functions may be performed with only one power unit. These operations include drilling, grinding, buffing, sanding, sawing, nut-setting, screw driving,



The Brill Multi-Tool

planing, filing, valve grinding, reaming, under-cutting nibbling, shearing, and mixing. In the automotive field the Brill Multi-tool, in addition to valve grinding and carbon removing, may be used for body cleaning and polishing, tire and battery repairing, and metal polishing. In steam railroad shops it is adapted to cleaning the front ends of locomotives, the outside of smoke boxes for repainting, side rods and valve motion levers. The Brill Multi-tool is a 4-bearing power unit, and in tests the Brill standard ¼-inch size performs satisfactorily alongside any heavy-duty machine in operation. It weighs only 5¼ pounds.

Freight Car Orders

Reports of the car service division of the American Railway Association show that on June 14 there were 462,079 freight cars in good repair and immediately available for service on the Class 1 railroads. This was an increase of 7,332 cars compared with June 7, when there were 454,747 cars. Surplus coal cars totaled 154,901, a decrease of 322 cars within almost a week, while surplus box cars totaled 250,481, an increase of 9,537 cars for the same period. These reports also showed a surplus of 29,057 stock cars, a decrease of 523 below the number reported June 7. Surplus refrigerator cars totaled 14,234, a decrease of 1,245 for this period.

On June 1, 30,680 freight cars were on order, as compared with 40,484 cars on order June 1 last year, and 20,712 on the same day in 1928. Despite the fact this is 9,804 cars below the number on order a year ago, the new freight cars installed in service during the first five months of the current year totaled 41,860 compared with 26,041 for the same period in 1929, or an increase of 15,819. Installations for this year were also an increase of 19,592 cars above the number placed in service in 1928 for the same period.

Distribution of the freight cars on order June 1, 1930, reported 15,756 box cars, a decrease of 1,874 compared with last year. Coal cars numbered 11,238, a reduction of 7,873 compared with the number on order June 1, 1929. Refrigerator cars on order totaled 1,992; flat cars, 1,322; stock cars, 272; and other miscellaneous freight cars, 100. Freight cars leased or otherwise acquired are not included in these figures.

Inquiries since the previous issue are as follows: United States navy department, for two flat cars; Portland Cement Co., Mexico City, for 20 side-door gondolas of 50 tons capacity; Republic Iron & Steel Co., 15 to 18 gondola cars of 70 tons; Mexican Railway, 85 box cars of 30 tons, 15 auto cars, 15 flat cars of 40 tons, and four cabooses; Freeport Sulphur Co. ten steel hopper cars of 50 tons capacity; Highpoint, Thomasville & Denton, six flat cars and two cabooses; Aluminum Company of America, 25 hopper cars, Anglo-Chilean Consolidated Nitrate Corpn., 350 steel ore cars; and Bethlehem Steel Co. trucks for five ore cars of 50 tons capacity. The Norfolk & Western will build 500 all-steel box cars in its Roanoke, Va., shops, and the Northwestern Refrigerator Co. will build 50 refrigerator cars, the frames being supplied by the American Car & Foundry Co.

Orders since the June issue of this magazine are: The Duquesne Slag Products Co. one air-dump car of 30 yards capacity, Waugh Brothers, Inc., for 10 air dump cars, 20 cubic yards capacity, Westinghouse Electric & Mfg. Co., for 6 air-dump cars, of 30 yards capacity, all to be built by the Koppel Industrial Car & Equipment Co. Magor Car Corpn. will build seven air-dump cars of 30 cu. yds. capacity for the Lehigh Navigation Coal Co., and 25 banana cars for the United Fruit Co; the Union Pacific has ordered 20 ore cars, 70 tons capacity, from the St. Louis Car Co.; International Nickle Co. of Canada, Ltd., has divided a $150,000 order for dump cars equally between the Canadian Car & Foundry Co., and the National Steel Car Corpn.; and the Erie has purchased 150 Hart, selective steel ballast type cars of 70 tons capacity from American Car & Foundry Co.

Locomotive Orders

Reports filed with the car service division of the American Railway Association show that Class 1 railroads had 14 per cent of the number of locomotives on line, or 7,798 engines in need of repair. This was a decrease of 827 locomotives compared with the number in need of repair May 15, when there were 8,625 or 15.4 per cent.

Class 1 railroads, June 1, had 7,493 serviceable locomotives in storage, compared with 7,101 on May 15.

The Inland Steel is inquiring for one or two storage battery, and five oil-electric 4-0-4 type locomotives.

Since the June issue of this magazine, the Canadian National has ordered two 4-6-4 type locomotives from the Montreal Locomotive Works, Ltd.; the same builders receiving also a previous order for three more locomotives of the same type; the Canadian Pacific has ordered ten type 4-6-4 locomotives from the same company. The Chicago, South Shore & South Bend has purchased two electric freight locomotives from the General Electric and Westinghouse Electric & Mfg. Co.; the Chilean State Railway has ordered, for express and baggage service, four electric locomotives from Westinghouse Electric & Mfg. Co.; the General American Tank Car Corpn. has ordered one more six-wheel switching locomotive from the

IT'S WISDOM TO PLAN FOR THE FUTURE

The H. & K. No. 930 Double Rotating Chair is the outcome of our best efforts. It is as comfortable as an easy chair at home, and for the same reasons.

BUT THE PRESENT NEEDS *Immediate Attention*

THE success of the new, luxurious seating equipment for railroad coaches has convinced most executives that luxury has a direct bearing upon railroad travel. Many of them are looking ahead to the purchase, at some favorable future time, of new cars with Hale & Kilburn double chairs.

But present-day traffic increases must be stimulated now. These luxurious chairs are as effective in existing cars as they would be in new ones. They occupy the same space as the familiar reversible back seats. They are placed on the same centers. They can be put in old cars with no trouble and at little expense.

A program of refurnishing existing cars can be put into effect on a very modest budget, giving present operation the benefit of the latest refinements in passenger luxury.

HALE & KILBURN SEATS

HALE & KILBURN CO.

General Offices and Works: 1800 Lehigh Ave., Philadelphia

SALES OFFICES:

Hale & Kilburn Co., Graybar Bldg., New York.
Hale & Kilburn Co., McCormick Bldg., Chicago.
E. A. Thornwell, Candler Bldg., Atlanta.
Frank H. Bodler, 903 Monadnock Bldg., San Francisco.
W. L. Jeffries, Jr., Mutual Bldg., Richmond.
W. D. Jenkins, Praetorian Bldg., Dallas, Texas.
H. M. Euler, 53 1st St., Portland, Oregon.

American Locomotive Co.; and the South African Iron & Steel Corpn., Ltd., has ordered one 4-8-2 locomotive from Baldwin.

Railroads had more locomotives on order June 1, than on any similar date since 1926, the number on this date being 431. On June 1, last year, there were 324 locomotives on order. Locomotives placed in service in the first five months of this year totaled 339, compared with 255 for the same period in 1929 and 670 in 1928. Locomotives leased or otherwise acquired are not included in these figures.

Passenger Car Orders

Inquiries since our previous issue are as follows: Union Pacific, for 14 chair cars, ten baggage cars, and one baggage and mail car; Mexican Railway, four steel coaches; Illinois Central, nine coaches and six compartment coaches; Erie, eight through-line coaches, 70 feet long, and two mail and express cars; Central of Georgia, two baggage and express cars, and one baggage and mail car; and the Boston & Maine, nine steel de luxe coaches, 72 feet long.

Passenger car orders are: Missouri-Kansas-Texas, three dining cars from American Car & Foundry Co., Erie, ten gas-electric rail-motor cars from Bethlehem Steel Co., three mail and express cars from American Car & Foundry Co., and three diners from Pullman; Chicago, Burlington & Quincy, five gas-rail motor cars from Pullman, the 400 h.p. plants to be supplied by the Electromotive Company; Boston & Maine, four diners from Pullman; the Long Island Railroad, 25 coaches, 70½ feet long, seating 69 passengers, from Pressed Steel Car Company, and 20 of the same from American Car & Foundry Co., all to be delivered in August and September.

Railway Construction

Tracks & Yards

ARKANSAS. — The St. Louis-Southwestern has let a contract to Reid & Lowe, Birmingham, for an extension from a point near Caraway to Truman, 15 miles, to cost about $800,000. This is part of a new line to provide a through route between St. Louis and Memphis.

CALIFORNIA.—The Sacramento Northern has applied to the Interstate Commerce Commission for permission to extend its Holland line to Ryde, in Yolo county, 8.3 miles.

INDIANA.—The New York Central has asked permission to abandon 14 miles of its White Water division between Beeson's and Hagerstown. The line has not paid operating expenses and will require extensive improvements if operation is continued.

OKLAHOMA. — The Frisco has permission to build an extension to its Shamrock branch to an oil refinery near Drumright, 3 miles, to cost $124,508.

OREGON.—The Southern Pacific has asked permission to acquire and operate the 41-mile line of the Valley & Siletz R. R., from Independence to Valsetz.

PENNSYLVANIA. — The Pittsburgh & West Virginia has let a contract to the Vang Construction Co., Cumberland, Md., for an extension of six miles from a point on the Connellsville extension, now being built, to a connection with the Donora Southern at Baird, Pa.

TEXAS.—The Corpus Christi, San Angelo & Roswell has filed its charter with the secretary of state, for the building of a railroad between the Gulf of Mexico at Corpus Christi and Roswell, N.M., about 75 miles. The company plans first to build a line between Corpus Christi and San Angelo, about 375 miles.

—The Santa Fe has let a contract to Sharpe & Fellows, Los Angeles, for an extension from Amarillo to Boise City, Okla., about 120 miles. This is a part of the projected line between Amarillo and Las Animas, Colo.

WEST VIRGINIA.—The Chesapeake & Ohio has let a contract to Haley, Chisholm & Morris, Charlottesville, Va., for a single-track tunnel to parallel the old Big Bend tunnel between Big Bend and Hilldale, about nine miles east of Hinton. The cost will be about $2,200,000.

Buildings and Structures

ARKANSAS.—Little Rock. The Rock Island and the Missouri Pacific have let a contract to the Luten Bridge Co., Little Rock, for a concrete viaduct to carry a city street over the tracks of these roads and Rose Creek, to cost about $127,000.

CALIFORNIA.—Pasadena. The Santa Fe is planning to build a passenger station here, larger freight handling facilities and various improvements in grade crossings, to cost about $7,000,000. The Santa Fe is willing to assume $4,200,000 of the total cost. The remainder is to be supplied by the city of Pasadena, with perhaps some aid from the county.

ILLINOIS. — Ingalton. The Elgin, Joliet & Eastern Ry., Chicago, a subsidiary line of the United States Steel Corpn., has let a contract to the Roberts & Schaefer Co. for a 300-ton capacity, 2-track, Simplex automatic electric locomotive coaling plant with coal crushing and lowering facilities.

—Galesburg. The Burlington has let a contract to Cameron, Joyce & Co., Keokuk, Iowa, for an extension to its yard. A contract has been let to Fairbanks, Morse & Co., Chicago, for a 900-ton reinforced concrete automatic electric coaling station here.

—Streator. The Burlington has let a contract to John Lightholder, Streator, for a passenger station and a freight station here.

INDIANA. — Indianapolis. The Big Four has let a contract to the Ellington-Miller Co., Chicago, for a repair shop at Beech Grove to cost about $160,000.

IOWA.—East Des Moines. The Rock Island has let a contract to Arthur H. Neumann, Des Moines, for a 10-stall addition to the enginehouse, a storehouse, and an enginehouse office. A contract for a water-treating plant has been let to the Railroad Water & Coal Handling Co., Chicago.

—Waterloo. The Illinois Central has let a contract to the Zitterell-Mills Construction Co., Webster City, Iowa, for an ice loading platform here.

KANSAS.—Topeka. The Santa Fe has let a contract to the T. A. Allen Construction Co., Topeka, for a fire station and a cafeteria auditorium building.

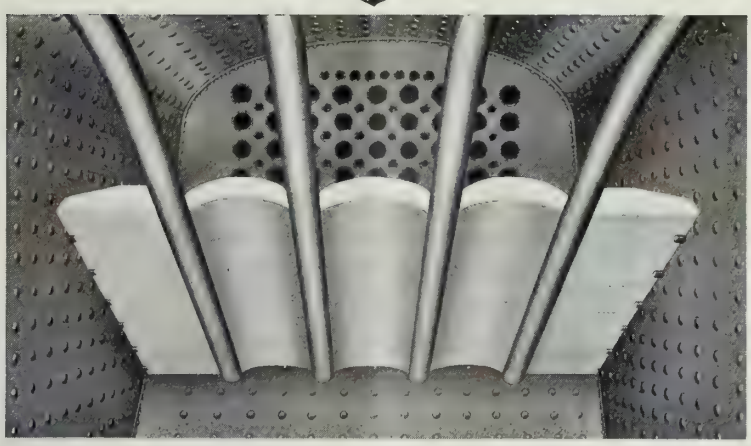
MISSOURI.—St. Louis. The Terminal R.R. Association of St. Louis is planning to build a merchandise market between Twelfth, Thirteenth, Spruce and Poplar streets, at a total cost of about $5 000,000. The building will be operated by the St. Louis Mart, Inc.

—Kansas City. The Missouri Pacific has let a contract to the Patti Construction Co., Kansas City, for a two-story reinforced concrete warehouse to cost about $50,000.

NEBRASKA. — Omaha. The Cargill Commission Co., Minneapolis, has let a

THE OUNCE OF PREVENTION AGAINST A NECESSARY TON OF CURE FOR FAULTY COMBUSTION CAUSED BY POOR ARCHES IN YOUR LOCOMOTIVES—

ECONOMY ARCHES



MORE THAN JUST "BRICK"—THE NEWEST THING IN ARCHES—
EARNS THE FIRST COST BY AFFORDING A PERFECT
AND ECONOMIC COMBUSTION AND ELIMINATION
OF USUAL REPAIRS AND MAINTENANCE.

ECONOMY ARCH COMPANY

Railway Exchange Building St. Louis, Missouri

There Is No Economy Except Ultimate Economy

Their low cost of application, their unsurpassed effectiveness in preventing rail creeping and reducing maintenance costs, and the fact that they may be reapplied with like-new effectiveness, makes the use of FAIR Rail Anti-Creepers an Ultimate Economy.

Figure their cost by the year.

THE P. & M. CO.
Railway Exchange
Chicago, Ill.
New York Montreal
London Paris
Calcutta Sidney

contract to the Fegles Construction Co., Minneapolis, for a 5,000,000-bu. grain elevator here on land leased from the Chicago & North Western. A contract for the driving of piling has been let to E. A. Whitney & Co., Kansas City. The complete project will cost about $3,000,000. The building will be operated by the Cargill Commission Co. and served by North Western trackage.

NEW JERSEY.—Jersey City. The Erie has let contracts to the Frederick Snare Corpn., New York, for a two-story pier to be built south of pier No. 9, which spans the New Jersey entrance to the Holland Tunnel at the Erie's Jersey City terminal.

—Jersey City. The Pennsylvania has let a contract to J. Rich Steers, Inc., New York, for pier F to be built at the foot of Bay street, to cost $1,583,000.

NEW YORK.—Brighton. The public service commission has ordered the elimination of the Butts crossing of the New York Central by the construction of an underpass. The Weedsport road crossing at Brutus is to be eliminated by constructing an overpass at a cost of about $178,000.

—Genesee Junction. The public service commission has ordered the elimination of the Sand Hill crossing of the Pennsylvania by the construction of an overpass, to cost about $136,000.

—Oswego. The public service commission has ordered the elimination of the grade crossing of the New York, Ontario & Western at East Seneca street, by the construction of an overpass to cost about $175,000.

OHIO.—Cleveland. The Erie has let a contract to the Stevens Construction Co., Cleveland, for the elimination of a grade crossing here.

—Cincinnati. A contract has been let to the Kerpen Construction Co., Cincinnati, for concrete masonry for the new lines of the Chesapeake & Ohio and the Cincinnati, New Orleans & Texas Pacific into the terminal here, at a total cost of about $150,000.

—Columbus. The Pennsylvania is planning immediate improvements to the union station here to cost about $750,000.

OREGON.—La Grande. The Oregon-Washington R.R. & Navigation Co. has let a contract to Tranchell & Parelins, Portland, for a passenger station here to cost about $150,000.

VIRGINIA.—Newport News. The Chesapeake & Ohio has let a contract to the W. Horace Williams Co., New Orleans, for a coal pier, exclusive of machinery. The pier will be 1000 ft. long and 70 ft. wide. It is one of the largest projects provided for in the Chesapeake & Ohio's budget for 1930.

Changes in Personnel

Executive & Operating

Leverett S. Miller, president of the New York, Westchester & Boston, a subsidiary of the New Haven Lines, retired July 1. He will be succeeded by **J. J. Pelley,** president of the New Haven, who will assume the new duties in addition to those of his present position.

M-K-T Lines has appointed **Homer Edgar McGee** executive vice president with general supervision of operating, engineering, accounting and traffic branches, effective July 1. Mr. McGee was formerly vice president and general manager in charge of operation. **Frank Wallace Grace,** general superintendent at Denison, Tex., has been appointed general manager.

William H. Williams has resigned as chairman of the board and member of the managing committee of the Denver & Rio Grande Western. He will be succeeded by **L. W. Baldwin,** president of the Missouri Pacific.

H. H. Halverton of Houston, has been elected president of the recently organized Corpus Christi, San Angelo & Roswell. Other officers are: **Edward Kennedy,** vice president; **W. V. Kennedy,** secretary, and **J. M. Wilson,** treasurer, all of Houston.

F. DeP. Landa, advisor to the organization committee of the National Railways of Mexico with headquarters at Mexico City has been appointed vice president and general manager in charge of operation, succeeding **M. Cabrera,** resigned. **L. Perez Castro,** a member of the organization committee, has been appointed assistant to the executive vice president with supervision over all activities other than operation, with headquarters at Mexico City. **E. E. Bashford** has been elected vice president and assistant treasurer of the National Railways of Mexico with headquarters at New York.

The jurisdiction of **W. F. Kirk,** general superintendent of the western district of the Missouri Pacific at Kansas City, has been extended to include the central division, formerly a part of the southern district. The jurisdiction of

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LOCOMOTIVE TERMINALS
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"I DESIRE to take this opportunity to express to you the satisfaction we have received from the manner in which this important piece of construction was handled by your people and the efficient manner in which the building was constructed, and particularly the saving below the estimates which you have been able to accomplish."

Built under the direction and from the plans of the engineering department of the Louisville & Nashville Railroad Company, William H. Courtenay, Chief Engineer and J. C. Haly, Architect.

UNITED ENGINEERS & CONSTRUCTORS
INCORPORATED
DWIGHT P. ROBINSON, PRESIDENT

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MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

CONLEY

Solid Manganese
Self Guarded

SPRING FROGS

SHOWING SPRING FROG IN SERVICE

Are giving excellent service under severe traffic conditions on Railroads using them.

Twenty years successful service by CONLEY TYPE FROGS have demonstrated their merit for safe and economical service.

CONLEY FROG & SWITCH CO.

Memphis, Tenn.

P. Carroll, superintendent of the Southern Kansas division at Coffeyville has been extended to include the central division. **H. P. Galbreath,** superintendent of the central division, has been appointed assistant superintendent of central division with headquarters at Van Buren, Ark. **J. W. Daniels,** superintendent of the White River division at Aurora, Mo., has been assigned to agricultural development work. The jurisdiction of **W. Wicker,** superintendent of the Joplin division at Nevada, Mo., has been extended to include the White River division.

Horace H. Durston has been appointed executive general agent of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Texas.

J. N. Haines, superintendent of transportation of the Lehigh Valley with headquarters at Bethlehem, Pa., has been appointed general superintendent of transportation. **C. L. Grim,** assistant to superintendent of transportation, has been appointed superintendent car service with headquarters at Bethlehem.

R. E. Newcomer, assistant to the general manager of the Wabash with headquarters at St. Louis, has been appointed superintendent of the Detroit division with headquarters at Montpelier, Ohio, succeeding **A. F. Helm,** transferred to the Decatur division with headquarters at Decatur, Ill. Mr. Helm succeeds **J. E. Stumpf,** given leave of absence. **Arthur Davis** succeeds Mr. Newcomer.

K. W. Fischer, assistant superintendent of the La Crosse division of the Burlington at Daytons Bluff, St. Paul, has been appointed superintendent of the Creston division with headquarters at Creston, Ia., succeeding **H. C. Murphy,** transferred to the Alliance division with headquarters at Alliance, Neb. Mr. Murphy succeeds **H. J. Hoglund,** transferred to the staff of the vice president in charge of operation. **W. R. Eble** has been appointed assistant superintendent of the Hannibal division at Brookfield, Mo., succeeding **J. E. Carroll** who succeeds Mr. Fischer at Daytons Bluff.

John S. Welsh has been appointed assistant to the superintendent of the Hocking division of the Chesapeake & Ohio with headquarters at Columbus.

W. M. Vandersluis, electrical engineer of the Chicago Terminal Improvement of the Illinois Central, has been appointed general superintendent of telegraph and signals of the Illinois Central with jurisdiction over fixed property in electrical service. **John B. Hamilton,** superintendent of freight service of the Illinois Central with headquarters at Chicago, has been appointed superintendent of the Wisconsin division with headquarters at Freeport, Ill., succeeding **J. F. Dignan,** deceased.

George N. Goad, acting chief of car service of the Canadian National, has been appointed chief of car service, effective June 1.

J. K. Brown, division superintendent of the New York Central with headquarters at Utica, N. Y., has been appointed assistant to the general superintendent.

Frank McElroy, superintendent of the Detroit division of the Michigan Central with headquarters at Detroit, has been transferred to the northern division with headquarters at Bay City. The Detroit division has been abolished.

O. W. Page, trainmaster on the Kansas City division of the Santa Fe at Argentine, Kan., has been appointed superintendent of that division succeeding **C. W. Nelson,** deceased.

Financial & Legal

J. M. Rosevear, general controller, and **C. E. Friend,** assistant general controller of the Canadian National at Montreal, retired June 1. The following changes in the accounting department personnel have been made: **J. B. McLaren,** controller of the central region at Toronto, will act as controller of the system; **T. H. Cooper,** general auditor at Montreal, has been appointed assistant controller, general accounts; **C. Egan,** controller at Winnipeg, will act as assistant controller, disbursements; **W. S. Harrison,** general auditor of revenues at Montreal, has been appointed assistant controller of revenues; **F. Horton,** general auditor at Detroit, has been appointed assistant controller of subsidiary companies. All with headquarters at Montreal. **J. F. Aitchison,** assistant controller, has been appointed regional auditor at Toronto; **T. J. Gracey,** assistant controller, will serve as regional auditor at Winnipeg; **G. N. Palmer,** controller, as regional auditor at Moncton, N. B., and **C. B. Bird,** assistant general auditor, as auditor at Detroit.

Edward S. French, president of the Boston & Maine, announces the establishing of a system for closer control of expenditures with a director of budgets functioning under the vice president in charge of finance to coordinate and check departmental estimates and projects. **H. F. Fritch,** passenger traffic manager for the past four years, has been appointed to the new position with headquarters as before at Boston.

A. S. May, treasurer of the New Haven Lines with headquarters at Hartford, retired July 1, after 57 years' serv-

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If, in addition, you could show an operating saving in hose, fuel, labor and practically every other item entering into your daily operating expense, the proposition would be extremely attractive—would it not?

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ice on that road. **T. F. Paradise,** assistant treasurer, succeeds Mr. May.

G. B. Perkins, general auditor of the Frisco Lines, has been appointed assistant controller. **C. B. Rex,** assistant to the controller in charge of personnel, succeeds Mr. Perkins. Both will have headquarters as before at St. Louis. **O. S. Jones** has been appointed assistant auditor of revenues with headquarters at St. Louis.

J. C. Michael, secretary of the Louisville & Nashville with headquarters at Louisville, has been elected treasurer, succeeding **E. S. Locke,** deceased. **John M. Scott,** executive chief clerk, succeeds Mr. Michael.

William H. Sievers, general auditor of the Chicago Great Western with headquarters at Chicago, has been appointed administrative head of the accounting department, succeeding **Conrad F. Krebs,** deceased. Mr. Krebs held the title of controller.

The Atlantic Coast Line announces the appointment of **George W. Lamb** as general auditor with headquarters at Wilmington, N. C.

Purchases & Stores

J. Arnott, assistant purchasing agent of the Canadian Pacific at Calgary, Alta., has been transferred to Winnipeg, succeeding **C. Slater,** acting assistant purchasing agent. Mr. Slater has been appointed assistant purchasing agent at Quebec, succeeding **R. H. Yarnell** who has been transferred to Calgary, replacing Mr. Arnott.

Traffic

The Baltimore & Ohio announces the appointment of **O. S. Lewis** as general freight traffic manager, and **Samuel House,** as freight traffic manager, effective July 1. Mr. Lewis has been with the Batimore & Ohio for 38 years, and freight traffic manager at Baltimore for the past nine years. Mr. House has worked for the Baltimore & Ohio for 29 years. He was appointed assistant freight traffic manager, February, 1924. **Golder Shumate,** general freight traffic manager of the Baltimore & Ohio, has been elected vice president in charge of freight traffic, mail and express and commercial development departments, succeeding **Archibald Fries,** deceased.

Harry A. Weaver, freight traffic manager of the Kansas City Southern, has been appointed vice president in charge of traffic, succeeding **James F. Holden,** who retired from active service January 1. Mr. Weaver has spent 37 years in railroad service, starting as a clerk in the general freight department of the Santa Fe in 1893. **G. B. Wood** will have jurisdiction over all matters pertaining to freight traffic.

R. G. Owen has been appointed assistant to the freight traffic manager of the Union Pacific System with headquarters at San Francisco.

C. E. Jefferson, assistant freight traffic manager of the Canadian Pacific at Winnipeg, has been appointed freight traffic manager with headquarters at Montreal. **H. W. Gillis,** assistant freight traffic manager at Montreal, succeeds Mr. Jefferson. **G. Hiam,** assistant general freight agent at Montreal, succeeds Mr. Gillis.

Walton O. Wright, general passenger agent of the Boston & Maine with headquarters at Boston, has been appointed passenger traffic manager. Mr. Wright succeeds **H. F. Fritch,** appointed director of budgets. **F. T. Grant,** passenger assistant to the vice president in charge of coordinating highway passenger transportation with the Boston & Maine's rail service, succeeds Mr. Wright.

S. B. Murdock, assistant passenger traffic manager of the Seaboard Air Line at Norfolk, Va., has been transferred to New York. **G. Z. Phillips,** succeeds Mr. Murdock at Norfolk. **William H. Donny,** general eastern passenger agent at New York, has been appointed general agent at Washington.

ASK THE MAN WHO KNOWS

Where do you go for money?

And where do you go for meat—for bread—for lumber?

To whom do you go for transportation?

Southern Pacific sells transportation. It has a local agent in every city, town and hamlet served by its 16,520 miles of rail lines and has an off-line agent in every important railroad center in the United States and Europe.

These agents will assist you in solving your transportation problem regardless of whether it involves your daughter's vacation travel or the marketing of a train load of perishables.

Your local Southern Pacific agent knows. He can save you time and money. He can tell you the best routes to playgrounds or markets; he knows what it costs to travel or ship between points; he can tell you how to pack and load your commodity safely and economically; if you want to know the time when you or your shipment will arrive at a certain station, ask your local railroad agent.

Southern Pacific

F. J. Muckenhaupt has been appointed assistant to the foreign freight traffic manager of the Southern with headquarters at Louisville, Ky., succeeding **H. G. McLean,** deceased.

W. J. Craig, passenger traffic manager of the Atlantic Coast Line with headquarters at Wilmington, N. C., retired June 1, after 51 years' service.

Ralph B. Rogers, assistant to the passenger traffic manager of the Erie with headquarters at New York, has been appointed general passenger agent.

A. W. Bower, division freight and passenger agent of the Chicago & North Western with headquarters at Madison, Wis., has been appointed assistant general passenger agent with headquarters at Chicago.

H. B. Tooker, traffic manager of the Bingham & Garfield, the Nevada Northern, and the Ray & Gila Valley, has been appointed traffic director of the Bingham & Garfield, and vice president of the Nevada Northern and the Ray & Gila Valley, with headquarters at San Francisco.

L. R. Nowotny, assistant chief of the tariff bureau of the Wabash, has been appointed chief of tariff bureau with headquarters at St. Louis succeeding **L. W. Cole,** appointed assistant general freight agent at St. Louis. Mr. Cole replaces **W. G. Wescoat** granted leave of absence.

C. F. Rank, assistant manager of mail and express traffic of the Milwaukee with headquarters at Chicago, has been appointed manager of mail and express traffic, succeeding **N. J. Van Schoyck,** deceased. The position of assistant manager of mail and express traffic has been abolished.

J. F. McMahon, assistant coal traffic manager of the Illinois Central with headquarters at Chicago has been appointed coal traffic manager, succeeding **B. J. Rowe,** deceased. **B. M. Hamilton** succeeds Mr. McMahon.

E. A. Teubner, assistant district freight agent of the Southern Pacific at San Jose, Cal., has been appointed district freight agent with the same headquarters succeeding **E. Shillingsburg,** retired after 44 years in the service of the Southern Pacific. Mr. Shillingsburg had been at San Jose for the past 25 years.

Mechanical

E. R. Battley, superintendent of motive power of the Montreal district of the Canadian National, has been promoted to assistant general superintendent of motive power of the Central region with headquarters at Toronto.

Lewis D. Freeman, assistant to the chief mechanical officer of the Chesapeake & Ohio with headquarters at Richmond, Va., has been appointed assistant superintendent of motive power at Huntington, W. Va.

E. M. Smith has been appointed mechanical superintendent of the Louisiana & Arkansas with headquarters at Minden, La., succeeding **J. E. Tierney,** resigned.

H. E. Myers, master mechanic of the Lehigh Valley at Buffalo, has been appointed master car builder with headquarters at Bethlehem, Pa.

E. F. Stroeh, mechanical superintendent of the Missouri Pacific with headquarters at St. Louis, has been appointed master mechanic of the Missouri and Illinois divisions at Poplar Bluff, Mo. The position of mechanical superintendent has been abolished. **G. T. Callender** has been appointed master mechanic of the Joplin and White River divisions at Nevada, Mo.

Civil

W. H. Stedji, resident engineer of the Twin City Terminal and the Duluth-Superior divisions of the Soo Line and the Duluth, South Shore & Atlantic at Minneapolis, has been transferred to the Fond du Lac, Stevens Point and

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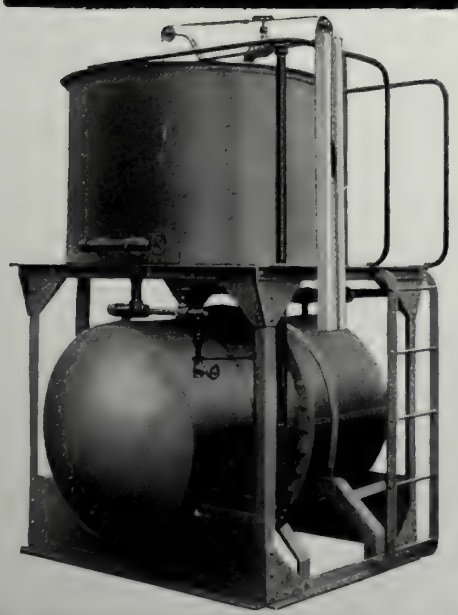

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Archibald Fries

Gladstone divisions with the same headquarters. **E. E. Foster,** division engineer at Stevens Point, Wis., has been appointed resident engineer with jurisdiction formerly exercised by Mr. Stedji. **S. P. Berg,** division engineer of the Twin City Terminal division at Minneapolis, succeeds Mr. Foster at Stevens Point. **W. M. Olds, assistant engineer** at Fond du Lac, Wis., has been transferred to Enderlin, N. D., succeeding **R. E. Sherer,** appointed division engineer of the Twin City Terminal division, who succeeds Mr. Berg.

A. J. Patterson, supervisor of signals of the Hocking Valley at Columbus, has been appointed signal engineer of the engineering advisory committee of the Chesapeake & Ohio, the Erie, the Nickel Plate, and the Pere Marquette with headquarters at Cleveland. **William Michel,** chief engineer of the Hocking Valley with headquarters at Columbus, has been appointed chief engineer of the advisory committee on ways and structures of the Chesapeake & Ohio with headquarters at Cleveland.

W. R. Bennett, assistant to the president of the Wabash with headquarters at St. Louis, has been appointed chief engineer maintenance of way, with the same headquarters.

R. M. Smith, assistant engineer maintenance of way of the Missouri Pacific with headquarters at St. Louis, has been appointed division engineer of the Southern Kansas and Central divisions at Coffeyville, Kan., succeeding **W. F. Murray,** appointed assistant division engineer of the Central division at Van Buren, Ark. The position of assistant engineer maintenance of way has been abolished.

D. R. Young has been appointed division engineer of the Lackawanna with headquarters at Buffalo, succeeding **F. L. Wheaton,** retired.

Obituary

Archibald Fries, for the past ten years vice president in charge of traffic and commercial development of the Baltimore & Ohio, died unexpectedly, June 9, at his home in Severna Park, Md., aged 66. Had he lived until August 1, Mr. Fries would have completed 50 years of continuous service with the Baltimore & Ohio. He was born in Cincinnati, February 27, 1864, and started his career in 1880 as an entry clerk in the general freight office at Cincinnati. He became chief clerk in 1892 and general agent in 1898. In 1913, when he was assistant general freight agent, he was transferred to Pittsburgh, and after three years there was appointed freight traffic manager. In 1918 Mr. Fries was appointed traffic manager of the Alleghany region under the U. S. Railroad Administration. He was appointed general traffic manager of the Baltimore & Ohio lines in 1920, and when the railroads were returned by the government to their owners March 1, 1920, Mr. Fries was made vice president in charge of traffic and commercial development.

A. L. Mohler, former president of the Union Pacific, died in Chicago, June 6, aged 80. Mr. Mohler had been connected with railroads in this country since 1868. He retired from the Union Pacific in 1912.

Elmer Ambrose Sperry, inventor of the gyroscope, died at St. John's Hospital in Brooklyn, N. Y., June 16, aged 69. Mr. Sperry had more than 400 patents credited to his name. He was considered by many to be second only to Thomas A. Edison in the history of American invention. The first Elbert H. Gary Memorial Medal of the American Iron & Steel Institute recently was awarded him for inventing and perfecting the steel rail defect detector.

Alexander L. Greenabaum, vice president of the O. F. Jordan Co., East Chicago, Ind., died at his home in Chicago, June 4, aged 50.

W. C. Motter, representative of the Barco Mfg. Co. and the Bettendorf Company at St. Paul, died June 22.

George Wilson Prewitt, auditor of disbursements of the Louisville & Nashville, died unexpectedly, June 14, at Anchorage, Ky., aged 60.

B. V. Sommerville, assistant to the chief engineer of the central region of the Pennsylvania at Pittsburgh, died June 7.

James L. Rowe, manager of the railroad department of the Chicago Pneumatic Tool Co., died at St. Elizabeth's Hospital, New York, June 5, from injuries received in an automobile accident. Mr. Rowe was born in Pittsburgh, December 10, 1885, and received his education in the public schools of that city. After working in various capacities and with different companies manufacturing pneumatic tools, he joined the sales department of the Chicago Pneumatic Tool Co. in 1919. In 1925 he was promoted to assistant manager of railroad sales. When Mr. Barbee became assistant to the vice president, January 1, 1926, Mr. Rowe was appointed manager of the railroad department.

James L. Rowe

John R. Grant, pioneer resident of Southern California and associated with early transcontinental railroad construction in the West, died at his home in Los Angeles, June 22.

Henry C. Snyder, assistant freight traffic manager of the Erie with headquarters at New York, died at East Orange, N. J., June 20, aged 62.

T. F. Whittelsey, secretary-treasurer of the American Short Line R.R. Association, Washington, D. C., died June 21, after a short illness.

E. S. McCarty, former general manager, vice president, and president of several small roads that now are a part of the Frisco Lines, died at St. Louis, June 6, aged 72.

B. V. H. Johnson, sales agent of the General Steel Castings Corpn., Granite City, Ill., and former vice president and sales agent of the Commonwealth Steel Co., died at St. Louis, June 2.

C. W. Nelson, superintendent of the Kansas City division of the Santa Fe Lines, died in Kansas City, June 4.

Robert A. Brand, a retired vice president of the Atlantic Coast Line, died at Wilmington, N. C., June 16.

J. F. Dignan, superintendent of the Wisconsin division of the Illinois Central with headquarters at Freeport, Ill., died in that city, June 9.

Robert Bruce Steward, a vice president and director of the Valve Pilot Corpn., New York, died May 17.

Lyle H. Rupert, service engineer of the Franklin Railway Supply Co., New York, died at El Paso, May 29.

Albert H. Hogeland, consulting engineer of the Great Northern with headquarters at St. Paul, died at Rochester, Minn., May 14, aged 72. Mr. Hogeland had been engaged in railway engineering work for 51 years, 45 of which had been spent with the Great Northern.

Joseph Frumveller, mechanical inspector and engineer of the **Vapor Car Heating Co., Inc.,** Chicago, died at his home in Chicago, May 13, aged 75. Mr. Frumveller was associated with the **Pullman Company** for many years, at one time holding the position of general foreman of the Pullman Car Shops. He was employed by the Vapor Car Heating Co. since 1910.

Supply Trade Notes

L. W. Chubb, former manager of the radio engineering department of the **Westinghouse Electric & Mfg. Co.,** has returned to the company as director of the **Westinghouse Research Laboratories.** Mr. Chubb succeeds **S. M. Kintner,** appointed assistant vice president.

Charles Edward Brown, Jr., for the past five years manager of the power and light department of the Chicago branch of the **Okonite Company,** has been appointed assistant to the general manager with headquarters at New York. **Elbridge H. McNeill** succeeds Mr. Brown.

W. L. Lewis, formerly assistant controller of the **Bethlehem Steel Corpn.,** has been elected vice president, secretary and treasurer of the **Chicago Pneumatic Tool Co.,** succeeding **J. G. Grimshaw,** secretary and treasurer, resigned.

The American Steel & Wire Co. has made the following changes in personnel: **G. F. Blackmer,** general superintendent, and **J. A. Coakley,** general traffic manager, have been appointed vice presidents, with headquarters at Cleveland. **B. H. Lawrence,** mechanical engineer, has been appointed chief engineer at Cleveland. **Frank Baackes,** vice president at Chicago, has been appointed assistant to the president.

The Hazard Advertising Corpn. announces the opening of a branch office in Boston at 950 Park Square Bldg., in charge of **Theron S. Curtis.** Contact work only is handled from this New England branch. Mr. Curtis formerly was a specialty engineer for the American Steel & Wire Co. in Worcester, and for ten years president of the T. I. Smith Co., Boston jewelers. The New York office of the Hazard Advertising Corpn. was moved recently to the Colonial Bldg., 295 Madison avenue.

J. L. Sydnor, for the past five years district manager for the **White Company** at Los Angeles, has been promoted to regional manager of the Pacific Coast with headquarters in San Francisco. **Rolla W. Moore,** former manager of the Portland, Ore., office, has been promoted to district manager, and **Ralph Guthridge** of Los Angeles has been promoted from salesman to manager at Portland.

William Hildebrand, traffic manager of the **Thomas A. Edison Industries, Inc.,** West Orange, N. J., has been elected a vice president of the corporation.

Benjamin B. Shaw has been appointed sales representative in the railroad department of the **Wood Conversion Co.** with headquarters in Chicago.

The Double-track...

Increases the Santa Fe train speed enroute. And by thus removing the interruptions from side tracking on single track lines, the Santa Fe renders an unrivaled transcontinental freight and passenger service between California and Eastern terminals.

The fast, cool and bracing passenger route.

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Pass. Traffic Mgr.
Chicago

JAMES B. DUFFY
Asst. Pass. Traffic Mgr.
Los Angeles

608 B

NEW JORDAN TYPE "A" SPREADER-DITCHER

JORDAN SPREADER
"Does the Work of an Army of Men"
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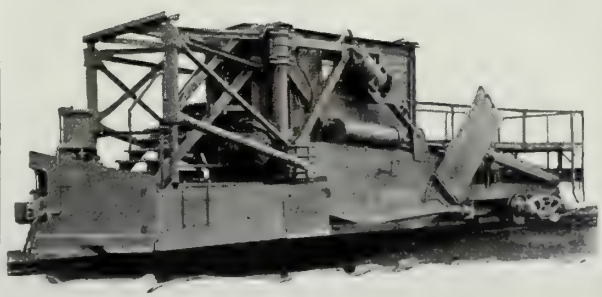
EAST CHICAGO, INDIANA



Meets Every Railway Spreading and Ditching Requirement

O. F. JORDAN CO.

East Chicago, Indiana

Walter J. Riley, President

Paul E. Illman has been elected vice president of **Dwight P. Robinson & Co., Inc.**, builders. Mr. Illman graduated from Harvard in 1909, was formerly vice president of the Peoples Bank of Buffalo, and has lately been connected with S. W. Strauss & Co., and Charles F. Noyes Co.

Lawford H. Fry has been appointed railway engineer of the **Edgewater Steel Co.**, Pittsburgh. Mr. Fry was formerly metallurgical engineer of the **Standard Steel Works Co.**, Burnham, Pa.

George Frey, formerly general manager of sales of the **J. G. Brill Company**, has been elected vice president in charge of the electric railway division.

George H. Lanborn, formerly production manager of the Chicago plant of the **Morrison Railway Supply Corpn.**, has been appointed supervising engineer of the manganese frog and crossing reconditioning department of that company, with headquarters at Chicago.

The Symington Co. and the **Gould Coupler Co.**, New York, have opened a sales office in the Terminal Tower Bldg., Cleveland. **Hynes Sparks**, assistant vice president of both companies, formerly at New York, is in charge of the Cleveland office.

The Whiting Corpn., Harvey Ill., has appointed **Ray H. Moore**, district sales manager in charge of the Cleveland office.

The J. S. Coffin, Jr., Co., Englewood, N. J., has appointed **George E. Watts** of Atlanta, sales representative. **Ernest R. Funk**, formerly with the **Locomotive Stoker Co.**, has been appointed mechanical representative.

O. O. Williams has been appointed assistant general sales manager of the **Magor Car Copn.**, with headquarters at New York.

The Independent Pneumatic Tool Co., Chicago, has purchased the **Cochise Rock Drill Mfg. Co.**, Los Angeles, which will be operated by the former company as a unit of its organization. There will be no change in personnel.

According to an announcement made by **George M. Verity**, chairman, **Charles R. Hook**, president of the **American Rolling Mill Co.**, and **W. L. Allen**, president of the **Sheffield Steel Corpn.**, negotiations for combining the interests of these two companies have been completed.

H. S. Schroeder, formerly vice president and general sales manager of the **Interstate Iron & Steel Co.**, has been appointed western manager of sales of the **Republic Steel Corpn.** with headquarters in Chicago.

Following the closing of the New York office of the **National Lock Washer Co.**, Newark, N. J., **F. B. Archibald**, vice president, has been transferred to 40 Hermon street, Newark.

Charles P. Whitehead has been appointed sales assistant to the vice president and general manager, Commonwealth division of the **General Steel Castings Corpn.** **William M. Sheehan** has been appointed sales assistant to the vice president and general manager of the eastern division.

The Superheater Co. has moved its New York office from 17 East 42nd street to the Lincoln Bldg., 60 East 42nd street.

George E. Kingsley has been appointed general manager of the **Magnetic Signal Corpn.**, Los Angeles.

The American Throttle Co., Inc., has moved its New York office to the Lincoln Bldg., 60 East 42nd street.

R. B. Alfonte has been appointed assistant to the manager of the Chicago branch of the **Morrison Railway Supply Corpn.**, Buffalo. The Chicago offices have been moved to 650 Railway Exchange Bldg.

The Hennessy Lubricator Co. recently opened a branch office at 20 East Jackson boulevard, Chicago.

James J. Crawford has been appointed representative of the Railway Appliance division of the **American Fork & Hoe Co.**, with headquarters in Louisville, Ky.

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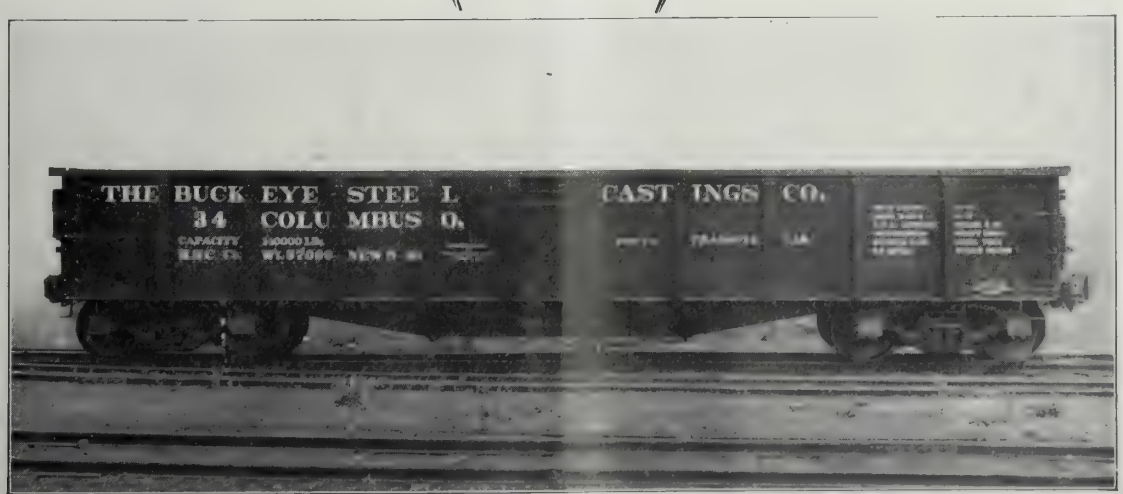

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FORGET THE WEATHER!

Don't load your power for a wet day or a "bad rail".

Instead, equip your power with Graham-White Sanders and LOAD TO CAPACITY.

GRAHAM-WHITE SANDERS

are ***automatically self-cleaning*** and ***insure*** traction under all conditions of rail or weather.

"PERFECTLY SIMPLE, SIMPLY PERFECT"

GRAHAM-WHITE SANDERS quickly return their first cost in the savings effected in sand, labor and repair parts while they increase, in a marked degree, the efficiency of a power unit.

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Transportation

(Reg. U. S. Patent Office)

Vol. VII

The National Monthly
of the Transportation Industry

No. 2

FEATURES *for August,* 1930

The President Takes a Trip, *Walter Raleigh*

Everything Takes the Siding, Track-Walkers Get Out on the Line, the Chosen Crew Puts on New Uniforms; It's Just One Thing After Another.

The Wheat Is Moving Eastward, *E. W. Asheville*

Railroads, Especially the Car Service Departments, Have to Hustle to Supply the Nation's Daily Bread.

On the Nation's Last Frontier, *N. M. Drew*

Something About the Government's Railroad in Alaska, Which Congress is to Investigate This Summer.

The Story of the Street Car, *C. K. Lee*

The General Engineer for the Westinghouse Company Concludes His Interesting History of This Form of Transportation.

Youth is at the Contro's, *H. C. Upshaw*

How Harold English, at 27, Became the Owner of One of the Country's Largest Airports, at Amarillo, Texas.

The Rates and Prices of Sixty Years, *Le G. Lauck*

An Economist Provides Interesting Figures Showing Freight Charges Per Ton Mile Are Only Slightly Above Those of 1885.

Little Stories About Big Men, *Department*

Cover Picture by Ewing Galloway, New York.

Meetings for September

THE LAST meeting of importance for the present month will be that of the Master Car Builders' and Supervisors' Association, at Detroit, August 26 for two days at the Book-Cadillac Hotel. The Supply Men's Association is to have an exhibit, and there are to be addresses by R. H. Aishton, president of the American Railway Association and T. C. Powell, president of the Chicago & Eastern Illinois. There will be talks, prepared especially for the occasion, on freight containers, explosives, and other diverting subjects.

September is likely to be a busy month in contrast with this. The Signal Section of the A. R. A., is to assemble at Hot Springs, Ark., September 9-11; the Equipment Painting Section, at the Congress, Chicago, on the same dates, Sept. 9-11; the American Railway Tool Foremen's Assn., at the Sherman Hotel, Chicago, Sept. 10-12, with an exhibit by the Supply Men's Assn.; the Telegraph and Telephone Section, at the Royal York Hotel, Toronto, Ontario, Sept. 16-19, and the Master Blacksmith's Assn., at the Hotel Morrison, Chicago, Sept. 23-25. The International Railway General Foremen's Assn., is to meet at the Sherman, Chicago, Sept. 16-19, and the Roadmasters' and Maintenance of Way Assn., at the Stevens Hotel, Chicago, Sept. 16-18, with an exhibit by the Track Supply Assn.

The Traveling Engineers' Assn., will meet Sept. 23-26, at the Sherman, with an exhibit by the Railway Equipment Mfrs.' Assn.

THE TRANSPORTATION PUBLISHING CO., INC.
(Formerly, Associated Pub. Co.)

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A. E. HOOVEN, *Vice President*
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Berkshire Type Locomotive on the Boston & Albany pulling a west bound freight through Riverside, Mass.

SUPER-POWER LOCOMOTIVES HAVE CHANGED THE CHARACTER OF TRANSPORTATION

"*A few years ago* freight locomotives were built generally for power at slow speeds, while today the demand for new freight locomotives is largely for high speed service, and the motive power which was satisfactory even so recently as five years ago is today frequently unavailable for a particular service because of the constantly growing demand for the high speed transportation of freight."

—*Wall Street Journal*
May 7, 1930

Lima Super-Power Locomotives have played an important part in bringing about this change. Not only do they produce the greater power fast freight service requires, but they also reduce the rate of fuel consumption and the cost of maintenance as well.

LIMA LOCOMOTIVE WORKS

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—Photograph by Northern Pacific Ry.

Chalet at Two Medicine Lake, Glacier National Park. The Summer White House Offered the President for His Vacation.

The President Takes a Railway Trip

By

Walter Raleigh

VARIOUS and interesting things transpire in the railroad world when the President takes a trip. From the moment when he leaves Washington until he is back again in the White House, all the energy of the railroads involved is devoted to him, and pretty nearly everything else falls into second place. Everything that experts can devise is employed in safeguarding his life and comfort.

Not much is said about the details of the weeks of preparation, and additional weeks of ceaseless vigilance that guards him wherever he may go. The public is told of his trip, and that he will be at this place or that city on a certain date. But behind all this is the most careful planning. Not only in the railroad world is this true, but the clerical force over which the quiet and unassuming Rudolph Foster holds sway, is most active.

Even on a minor trip, such as a visit to some one city to deliver an address, after which there is a hurried return to Washington, the same extraordinary care and caution is displayed that distinguishes a long trip to Florida or California or the "swing around the circle" to acquaint the nation with government policies.

The first railroad, that is the one chosen out of Washington, has charge of the entire trip in so far as transportation and technical affairs go. Until the President reaches his destination or is safely escorted to his

office at the White House the management of this railroad is on the *qui vive*.

With the help of the President's secretary and the efficient Mr. Foster, the officials of this first railroad work out an operating train schedule. They must chart a thousand and one details as to the running of this special train. They decide where the President's special shall leave their tracks and be taken over another road, and where this road shall turn the train over to the next, and so on until the journey is completed. Throughout the journey the officials of the originating road are in charge of the trip as it pertains to railroad matters, and they accompany the special train.

As for the train crew, special attention is given to its selection. Even the matter of uniforms is remembered. It is desired that every employe shall look and act his best, and if new garments are needed these are supplied without hesitation.

In the matter of mechanical operating minute inspection is given to the entire train, from the engines and the tenders to the last nut and bolt on the observation platform at the rear end. An inspector is chosen who is reliable and perhaps severe in his demands. He goes over the road and then accompanies the train throughout its trip on his line giving way to another inspector from the particular railroad over which the train is running.

The Presidential Special is equipped with extra tools and various extra devices and accessories, in order that no unforseen defects may result in discomfort or delay. It is considered an honor to be chosen to oversee these precautions, but the inspector is one of the happiest men in the world when the President and his company are safely discharged at their destination without mishap or untoward incident. That is the only answer he seeks to his constant prayers.

The best engine on every division is assigned to haul the train, and the engineer and fireman are picked men. Even the coal that fills the tender is specially selected for its quality. There must be no failure of steam due to poor coal. The master mechanic of every division is especially charged with responsibility for the engine, and generally the road foreman of engines rides with the engineer and the fireman to see that an even speed is maintained and that the train is run safely and comfortably. He is there to help decide matters of moment that may arrive suddenly. No other person is permitted on the engine from the time it is ready to haul the special until it has yielded its task to another at the end of its division.

From the baggage car to the engine cab there is placed in operation a telephone line so that the members of the train's crew can communicate with the engineer without having to go over the tender to the cab. The telephone is used also to save time, and to avoid annoyance by too much use

The President Wouldn't Leave Washington if the Weather Stayed This Way.

of the whistle and air cord which is the standard method of sending orders between the engineer and the conductor.

Ordinarily trains of this kind are operated on a set schedule. The engineer knows his schedule and keeps his speed even, be it fast or slow, but the speed of the President's train is varied to suit the desires of the chief executive and his party, and may be altered, for example, to permit them to get a better view of the scenery through which the train is passing. Everything is done to make the trip pleasant for the head of the nation.

A telegraph and telephone crew is on the train with portable telephone and telegraph sets. These men have blueprints showing the location of every telephone and telegraph line so that wherever they may be they can find in a few minutes the nearest wires and connect the train by telephone and telegraph with the rest of the world. Special linemen are among the group, all under the direction of the superintendent of telegraph. In addition to the special officers and officials and experts, there is the usual full train crew.

Previous to the departure from Washington every inch of track has been gone over. Eight hours before the train is due at any point there is a guard placed along the track to make certain that it is in perfect condition. Every switch is inspected and kept under surveillance, and where there is danger of a slide of earth as near a cut or culvert, a last minute inspection is made if weather conditions make this advisable.

Orders are sent out for all freight trains to be clear of the path of the Presidential special an hour before it is due. Ordinary switching of cars or engines on the main line is forbidden, and all such trains are kept at a standstill until this train of trains is cleared through the block of that region.

So close is the watch kept over the President when traveling that, for example, when former President Taft took one of his swings around the circle, the track patrol was so heavy that no man had more than 500 yards of track to watch, and at other places the patrols were even more numerous. This is typical of conditions when President Hoover travels.

After every possible care has been taken to insure the smooth operation of the train, the railroad officials turn their attention to meet any emergency that might develop. Relief engines are placed along the route with steam up and crews ready, waiting until the President has passed from their territory. Then too, wreck trains are kept in readiness. Engines are attached, steam up and crew waiting in case some freight car should jump the rails or a careless motorist stall at a grade crossing or some wandering live stock derail a local.

It is considered necessary to send a pilot train ahead of the special. The exact distance varies, depending upon local conditions. This guard train consists of an engine and two or three flat cars. Transportation officials and the general manager of the railroad over which the President is traveling may be found on this advance guard.

Even if all such precautions are taken and entail great expense and much strain, the railroads of the nation prefer that the President take a special train rather than attempt to travel as an ordinary citizen. It is known that when former President Coolidge announced that he would go to New York early in his administra-

tion and would not take a special train but would engage berths on the sleeping cars as any ordinary citizen, the railroad officials were dumbfounded and in a quandary as to how to guard him properly. In fact, so difficult did the situation become that company officials beseeched the White House advisers to persuade the President to take a special train even if the railroads had to donate its cost, in order to make it possible for the necessary safeguards to be taken. In the face of the technical reasons advanced even the economy program of President Coolidge had to be abandoned. It was not at his order but rather to make it possible for the transportation officials to handle the railroad details properly.

The swings about the circle frequently indulged in for various reasons by other executives were begun by President Johnson. President McKinley, of the more recent instances, made several long trips. President Roosevelt covered thousands of miles, but President Taft set an all-time record. While in the White House Mr. Taft rolled up some 114,500 miles by rail. President Wilson crossed the continent twice. He was on the second trip when he collapsed. In bringing him back, railroad men still talk of the speed made by that train. It traveled the fastest of any special chartered by the government. President Harding was also quite a traveler. He, too, was returning from a long trip when he was cut down by death.

Although the eyes of the railroad world are focused on the President, and the people of the nation follow him to his summer home, the White House offices are still doing business at the old stand, and the general operation of the executive branch of the government continues without interruption from Washington. This is due to the fact that Rudolph Foster, simply listed as executive secretary, is on the job. Since the days of McKinley, persons who have had business at the executive offices have known Foster, but there are millions who do not know how useful a cog he is in the conduct of government business. He is Washington's most adept official in hiding his light under a bushel.

If Mr. Foster ever should write a book about the seven presidents he has served; if he ever told the incidents he had witnessed, or related the intimate information which he has, it would be America's best seller. But he won't do it. He would much rather have his name kept out of print than to see it in type.

Mr. Foster, at Washington, is the contact man, the liasion officer between the summer White House and the executive offices. He is in daily communication with the President or his secretary. He is a White House fixture and a very important one at all times, particularly so and with emphasis when the chief executive is absent. His desk is next to that of the secretary of the President. It is but a few feet from the President's inner room.

In the days of President McKinley it was once necessary to obtain an extra stenographer to help fill a temporary assignment. Someone sent a messenger over to the war department to borrow a good worker for a day or so. Rudolph Foster was lent but he never went back to the war department. He has been at the White House ever since, and has come to occupy a position of extraordinary responsibility. Presidents come and presidents go, but it seems that Foster goes on forever. Democrat or Republican Presidents may occupy the center of the stage for four or eight years or for but a part of a term, like McKinley and Harding, but in the anterooms there is found the faithful Foster. He has broken in several Presidential staffs. He knows the files and where all the private and special correspondence is put, and all about how various functions are handled.

No one ever is called President *pro tempore* in the United States, but if such a post were created Rudolph Foster would get it. It is a case of "let Foster do it" during the hot steaming days of the capital's summer or when the President travels.

It is necessary that a President *pro tempore* be a diplomat. He must be courteous, kind, practical and business-like. He must know how to get

A View of Long Beach, Cal., From the Ocean. When Something Far Down in the Deeps Kicked Up Such a Rumpus That the Breakwater Was Damaged About $100,000 Worth.

A Track-Layer Building Extension for the Canadian National Railways Into the Wilds of British Columbia.

things done, and how to do enough and not too much. That, perhaps, is the reason why Mr. Foster stays on the job. It requires tact, an insight into human nature and extreme patience. And this man has them all. His job doesn't ruffle him, but he doesn't like publicity. He will not like this. He is sure to say, "Why didn't you write about the chief and leave me out of it?"

Yet really, almost any White House story is incomplete without Mr. Foster. And as for an account of the President's travels, it is natural enough to say, "Ask Mr. Foster," is it not?

New British Columbia Terminal

The new $2,300,000 cold storage terminal warehouse recently completed at New Westminster, B.C., is rated as the most modern on the Pacific Coast, a model after which efficient transportation facilities may be designed. This company-owned enterprise is the largest on the coast, with a capacity for 1,600 tons of vegetables on the first floor; storage space for 171,000 boxes of apples on the second floor, and on the third floor space to accommodate 56,000 cases of eggs and 61,000 boxes of apples. The holding freezer provides space for 1,000 tons of poultry; a fish-holding capacity of about 2,000,000 pounds, where 29 tons of fish daily may be frozen. On the fourth floor there is apple storage for 41,000 boxes and a freezer capacity for 2,000 tons of berries. Facilities are provided to handle everything the modern steamship and railway transportation company may be asked to carry and safeguard, such as furs, both coats and raw skins; bulbs may be placed in storage and held dormant for months; space is provided to care for hundreds of tons of seed potatoes and onions, to maintain twice the vitality possible under normal conditions, due to the even temperature and ventilation.

A large room is set aside to care for shipments of celery, which is kept fresh! another space for citrus fruits; patent leathers are placed in another compartment, automobile batteries, Brazil nuts, and coffee are all held awaiting shipment. An innovation is a flour storage department, where mills goods may be kept awaiting shipment to Europe or the Orient, at a temperature which insures against germ development and mold. In addition to these complete facilities, the new terminal manufactures more than 600 tons of ice, stored ahead of demand to meet emergencies. In mammoth rooms are scores of great hogsheads of mild-cured salmon and casks and boxes of all sorts of foodstuffs.

On the land side are rail facilities to accommodate shipments from the Canadian National, Canadian Pacific and Great Northern lines; on the opposite side is the wharf frontage, with provision to extend facilities as demand may arise. This is really the first unit of what is proposed as one of the largest and most extensive cold-storage terminals in the world, acting as a shuttle between the growing trade between Western Canada and the Orient, United States, and Europe.

In addition to the terminal for cold-stored goods, there are extensive lumber assembling yards, where British Columbia shipments are made to many parts of the world. Facing directly on the harbor, with two rail lines between the wharf front and the terminal structure, and by use of latest loading devices, it is possible to pass cargo in or out of a ship with the shortest possible waste of time and energy.

The present equipment consists of three tubs and shell brine multipass coolers each of 18,000 square feet cooling surface, circulation of brine to the cold storage rooms by direct coupled centrifugal pumps, defrosting brine coils and ammonia coils, and pre-cooling on the bunber system.

World Motor Cars Now 35,127,398

A world census of automobiles announced by the commerce department fixed total passenger cars, trucks, and buses in operation on January 1, last, at 35,127,398, or about one for every 55 human beings. The total is 9 per cent greater than the number in operation one year previous, while the United States, in which 26,653,450 of the machines are registered, has three times as many as all the rest of the world put together.

For this country, the proportion of cars is one to every 4.5 persons. Canada and New Zealand are next with a car for every eight persons.

Of the revenue applied to rural roads, $297,967,756 was used for construction and maintenance of state highways; $85,113,708 for construction and maintenance of local roads; and the remainder, $23,371,785, applied as payments on state and county road bonds.

The Wheat Is Moving Eastward

By

E. W. Asheville

Western Canada's Grain Starts for the Head of the Great Lakes.

EVERY morning the world wakes up hungry. "Give us this day, our daily bread," was a prayer popular before the railroads fulfilled the promise. Three times a day, year in and year out, millions at home and abroad should thank the mighty transportation systems that they need not know want.

Starting in August every year and, in most years, flowing like a mighty river until August of the following year, this everlasting river of wheat keeps pouring over the lines serving the grain producing areas. On, around the calendar, train after train pours an avalanche of golden grain into the mighty hoppers and keep the wolf from the world's door.

And what an astounding system this distribution of grain has come to be! It calls for a system of systems, unparalleled in modern railroading. And like many another achievement in railroading, this one is known only to those intimately connected with it.

Long since Canada jumped to second place as a wheat producer. Since fewer people live in the wheat-growing area than in most lands, this means that the transportation lines take nearly all the grain away. Last year, for example, the Canadian National and Canadian Pacific lines handled two and one-half cars of wheat to every car handled by all railroads serving the wheat belt of the United States, the average haul being from the heart of the plains to the head of the Great Lakes or the Pacific, or 1000 miles.

To collect, sort and distribute three or four hundred million bushels of wheat, calls for one of the most efficient grain-handling systems in existence. The movement of all kinds of grain in Canada is characterized by a clean-cut, up-to-date bulk-handling system, whereby advantage is taken of the "flowing" properties of the grain, which is loaded, cleaned, weighed, moved, stored, reloaded and trans-shipped without once calling upon the main strength and awkwardness of hand labor.

After the vast empire has been plowed and seeded, and while the grower patiently watches the incessant rains and floods, the prolonged dry spell, or the "just right" weather, another set of eager eyes is gazing at the entire grain country profile. That chap, though he numbers not one individual, but hundreds, is the sharp eyed railroader.

Just as the wheat gets into the shot blade we may see an army of trackmen going up and down the lines, replacing steel, re-ballasting, strengthening bridges, getting set to carry the strain of speeding grain trains. In the shops we may see other crews going over locomotives; rebuilding cars and cabooses; in executive offices the generals of the railroad army are all set to start in motion the mighty machine to play one of the sweetest symphonies known to man—plenty of bread.

Long before the reaper and binder start humming, other railroaders have marshalled and rushed to the far-flung empire of the West, between fifty and sixty thousand harvest hands. Harvest Specials, long trains carrying hundreds of happy-go-lucky men, speed from east and west.

Before the bundles of golden grain go into the threshing machines, the car service staff mobilizes thousands and thousands of empties, distributing them, in proper number, at remotest country sidings. When we remember that nearly every one of these cars makes the cycle from country loading platform or elevator to towering terminal elevators, whether at the head of the lakes or to Vancouver and back again, not less than four times, we have not 100,000 cars, but 400,000, which, hitched end to end, would make a train of continent-spanning proportions.

To handle these cars calls for the service of 2,000 locomotives, about

The Pennsylvania Railroad's Grain Elevator at the Port of Baltimore: Capacity 4,250,000 Bushels. It Can Deliver Wheat Into Ships at the Rate of 260,000 Bushels An Hour.

equally divided between Canadian Pacific and Canadian National Railways. Each engine averages 150 miles a day, and in 60 days, the fleet of leviathans speeds 18,000,000 miles. The moon is only 238,000 miles away!

At no time is a car sent promiscuously for a ride. A careful scientific study of the crop reports and estimates tells traffic men just when and where every car is needed, and where it goes on time. If within a few hours' time there should be a change in local conditions, either to lengthen or shorten crop estimates, the system is so flexible that it may be made to move up or down the scale in response to wired orders.

Every hour of the grain-harvest season, traffic men have their fingers on the pulse of the patient, and stand ready to make quick decisions if stimulation is needed to handle increased production.

Truly, the car service department of C.N.R. and C.P.R., may be termed all-wise, eagle eyes. Daily reports are received on number cars loaded and started rolling; from terminals empties started back to the grain country, and a record of those in transit. At a moment's glance at their charts, these C.S. boys can actually tell you where a specific car is situated, whether standing idle, rolling, at the terminal, or at the country siding.

Some very peculiar things occur in this game of moving a nation's grain to market. The Canadian National agent at Underhill, Manitoba, during the season of 1929, loaded box car No. 309,417 with grain for the head of the lakes. A month later the same car stood in almost the identical spot on that country siding. It contained merchandise from Winnipeg this time, but the agent had to pinch himself to make sure he was not in a dream.

So complex are the movement of these grain cars, and so varied their destination, that a statistician in the operating department estimated that the chances of the same car returning to the same switch in four weeks, is of a ratio of about 600,000 to 1, odds too short for much gambling.

The western lines are speeded up between 30 and 40 per cent above normal, according to the size of the harvest. Yet, as in other branches of railroading, green-horns cannot be depended on. Thus, between three and four thousand men are transferred from eastern and western divisions to carry on during the rush season. Nearly all are men who lack sufficient seniority to hold regular jobs the year around, although experienced sufficiently to step in and take hold in the rush period.

Likewise, to staff the grain fleets, wholesale temporary promotions are made on the western lines among the year-around crews; firemen become engineers overnight; wipers are transferred to firing, and brakemen become conductors. Yet, none step forward, even temporarily, unless they have passed a rigid examination.

A fleet of between eighty and a hundred powerful freight locomotives, take between 10,000 and 12,000 empties from eastern and western lines just before harvest opens. Both the C.P.R. and C.N.R. have large yards at Winnipeg for the assembling and distributing of 30,000 to 40,000 cars to care for the tide of grain.

"Notwithstanding the keen competition in the field of modern transportation in recent years," said T. C. Knight, of the Canadian Pacific transportation department at Winnipeg, "our lines accomplish a feat so gigantic in the movement of the grain crop that it is unequalled in the history of railroading.

"As an illustration of the rapidity in the handling of traffic in these modern days, grain equal in volume to the entire annual crop of forty years ago, is now handled every 24 hours by the C.P.R."

The Picture on the Cover

The New York photographer, Ewing Galloway, shows in the cover picture this month, a familiar scene. Engineer Jordan at the throttle of the New York Central's "Southwestern," which the reporters call a "crack" train running between New York and St. Louis on the Hudson River division.

There are persons who are so independent that you cannot depend upon them.—*Spurgeon.*

It Pays to Reduce

At Grand Central Airport, Los Angeles, public sightseeing airplanes charge but 1 cent a pound to take tourists aloft. This new method of charging was recently tried as an experiment, and it proved so successful that it is now an established rate for sightseeing from the air. On one Sunday, recently, about 250 airplanes visited the field, and more than 1,500 persons were taken aloft, most of them for the first time. The heaviest passenger thus far carried was a man weighing 372 pounds.

On the Nation's Last Frontier

The Government's Alaska Railroad Still Shows Operating Deficit

By N. M. Drew

TO MANY persons in the United States the Alaska Railroad is merely a name as mysterious as Thibet. To the people of Alaska, however, it means the difference between snow-and-ice-bound months, and communication with the outside world over a line that serves as a connecting link between their territory and the United States.

The Alaska Railroad extends from Seward to Fairbanks, 470 miles, and is operated all the year round. Seward, the starting point of the road, is open to vessels throughout the entire year, being known as an open port. Anchorage, the headquarters of the Alaska Railroad, can be reached by water only seven months of the year, and therefore suffered much in the past as did Fairbanks, center of the mining industry, until the railroad development came along to "carry in" the needed materials and supplies, and "carry out" the seemingly exhaustless wealth the mines produce. One of the very important products of these mines is a high class bituminous coal. It is easy to understand the relief and gratification Alaskans felt when they realized that now their shipments can be freighted over the railroad to a point where they can be hauled over frozen surfaces to their final destinations. This becomes clearer when one knows that at present there are no hard-surface highways in Alaska; that is to say they are hard-surfaced only when they freeze. For the most part they are gravel-covered and suitable only for light vehicles, whereas much heavy mining machinery must be moved. And this is where the Alaska Railroad enters the picture.

The Chamber of Commerce at Anchorage, Alaska, Evidently Is Putting on a Trade Boosting Trip With the Midnight Sun Limited. This Is the Station at Anchorage.

At Nenana, 411 miles from Seward, the Alaska Railroad connects with the interior river system. That is to say, between Nenana (the junction of the Alaska Railroad and the interior rivers) and Holy Cross, the Alaska Railroad operates steamboats on the Yukon River. These boats carry supplies and passengers, both "in" and "out," benefiting the country some distance from the river as well as points situated directly on the Yukon River. This steamboat service in turn feeds into the roads and trails of the interior country. Government statistics show a distance of 720 miles to be covered by the steamboat service of the Alaska Railroad plying along the Yukon River.

To give a still clearer conception of just where the Alaska Railroad begins and ends, let us take Seattle as the starting point, and make what is known in transportation circles as the Golden Belt Line Tour. This tour, by the way, gives one the most comprehensive appreciation of Alaska. Enthusiastic tourists declare it to be the premier trip of the world. Leaving Seattle one may follow the southeastern coast of Alaska as far as Juneau; thence across the Gulf of Alaska to Cordova, Valdez, Latouche and Seward in the Prince William Sound district. One may then leave the steamer at Seward and go over the Alaska Railroad to Fairbanks, a distance of 470 miles. If the tourist takes advantage of the steamer service on the Tanana-Yukon Rivers from Nenana, he may go on down to Ruby or Holy Cross; or may journey from Nenana down the Yukon River to Dawson and White Horse, and thence

Alaska Railroad Shops at Anchorage.

Enginehouse and Machine Shops at Seward.

to Skagway, at which point he may take his return steamer to the states.

And, speaking of tours and tourists, one is reminded that one of the deservedly popular passenger conductors on this Alaska Railroad is Frank L. Knight, who differs from other conductors anywhere in the world, according to travelers who ought to know. Knight is president of the First National Bank of Anchorage, Alaska; and if that isn't a distinction we don't know one. Knight is a native of Lafayette, Ind., and served on American and Mexican railroads before going to Alaska.

In building the Alaska Railroad the windings of rivers and the whims of glaciers and mountain peaks had to be contended with. Some of the line is cut through solid rock. The steep slopes of the mountains that confronted the engineers in many places made it necessary to build loops. This in order to keep the grades from becoming too steep. Turnagain Arm is an example, a loop that is a fine specimen of the wonderful engineering skill evidenced also in some fine steel-arched bridges spanning wild-looking canyons and wide rivers. The Susitna River bridge, about 260 miles from the coast, is another example of skillful workmanship, being 504 feet long by 40 feet deep.

Leaving Seward the railroad climbs the Chugach Mountains on a grade of 2.2 feet in each hundred feet to Divide (twelve miles from Seward). A short descent and it runs to a point 40 miles from Seward, where again it climbs the mountain (on grade of two feet in a hundred) to the summit at Grand View, an elevation of 1,063 feet. From the summit the railroad follows a grade of 2.2 feet to the hundred to the southern end of Turnagain Arm (on Cook Inlet). From Mile 60, it takes an easy grade to Anchorage, 114 miles from Seward. From Anchorage the railroad passes through the valley of the Susitna River, follows the headwaters of that river, and crosses the Alaska Range, the continental divide of Alaska, through Broad Pass. The summit, 310 miles from the coast, is said to be the highest point on the railroad, with an elevation of 2,364 feet. From the summit the line follows the Nenana River to the city of Nenana. From Nenana, with an elevation of 362 feet, the railroad carries through to Fairbanks, with an elevation of 448 feet, completing a distance of 470 miles.

A dispatch from Washington says an appropriation of $1,314,000 has been made for the Alaska Railroad to carry on during 1930. This draws attention again to the oft-heard criticism concerning the yearly deficit of the Alaska Railroad. The government's figures show that the operating loss for 1929 was $958,414, an increase of $111,024 or 13.1 per cent over the preceding year. However, it should be borne in mind that the railroad is only abount 15 years old, and that it was built through a land beset with many natural obstacles with the sole idea of developing the vast interior. The records show that since congress authorized the building of the road $66,581,839 has been spent. Of the total amount, $54,397,995 represented the capital cost of the road, while the operating deficits aggregate $12,183,884.

Supporters of the Alaska railroad are confident that with the growth of industries, such as agriculture, mining, fur farming and reindeer-raising, a corresponding benefit will be felt by the Alaska Railroad. It is noted that two of the richest farming districts in Alaska are situated near this road, the Matanuska Valley in Southern Alaska, and the Tanana Valley in Central Alaska. The Alaska Railroad makes the resources of these rich valleys available for the farmer because he can readily get his supplies "in" and just as readily ship his products "out" to points in Southeastern Alaska and to the states.

With this bright outlook for the future, it is the hope of those who have faith in the Alaska Railroad that in the not distant future the line will be operated on a paying basis. Considering the wealth that has been poured out of the territory, however, the staunch supporters of the road look upon the small deficit as unimportant. It is declared that since 1880 approximately $600,000,000 has been taken out of Alaska's mines, and it is the boast of those who believe in Alaska that its undeveloped natural resources would pay the national debt. Furthermore, beyond every other consideration, the Alaska Railroad has made it possible for those

How Should You Like to Do a Little Switching in the Alaska Railroad Yards at Seward?

on the inside to get out, and for those who wish, to get in—across the Last Frontier.

Long Freight Trains

The average number of cars carried by freight trains in 1923 was 48 per train. The Erie railroad ran a train 8,547 feet long, of 251 cars, on July 23, 1914. The train weighed 17,912 tons. In November, 1914, the New Haven ran a train from Victoria, Va., to Roanoke of 201 cars, a train 8,482 feet long, weighing 14,573 tons and making the 123 miles in 7 hours and 35 minutes. Both the New Haven and Virginian trains had only four loaded cars. The Canadian Pacific ran a wheat train of 135 cars, weighing 8,275 tons. This is about the heaviest train run for that number of cars.

The Cinder Dick's Mistake

A verdict of $10,000 has been awarded to C. E. Dabney at Atlanta against the Central of Georgia railroad as the result of a suit filed by him on the grounds of false arrest and imprisonment in connection with a case three years ago when he was acquitted of a charge of interstate shipment thefts.

Dabney had been a shipping clerk for the railroad for 15 years. It was brought out in his suit for damages that he had been held for several days before a warrant for his arrest was issued and that he was arrested on the testimony of two box car thieves later convicted and sentenced.

His suit asked $25,000 damages on each of three counts.

Claims in 1929 Some Higher

Freight claims paid in 1929 by the railroads of the United States and Canada for loss and damage to freight shipments, totaled $37,432,966, according to complete reports for the year received from the carriers by the freight claim division of the American Railway Association. This was an increase of $875,723 or 2.4 per cent above the amount paid in 1928 but a reduction of $1,280,093 or 3.3 per cent under 1927. The claim bill of the railroads in 1929 was a reduction of $59,297,410 or 61.3 per cent under that for 1921, when it totaled $96,730,376. On the basis of the total number of cars of revenue freight, claims paid by the railroads in 1929 average 68 cents a car, compared with 68 cents in 1928 and $2.35 in 1921.

Twelve of the 16 causes for freight claims reflected reductions in 1929 compared with the preceding year, while only four showed increases.

The railroads investigated and paid 74.7 per cent of all claims within 30 days after such claims were filed in 1919 compared with 74.1 per cent in 1928. Within the first 90 days after such claims were filed, the railroads had paid 91.3 per cent of all claims in 1929 compared with 91.5 per cent in 1928. The number of claims handled in 1929 totaled 2,514,578 compared with 2,371,991 in 1928.

A Snow Slide on the Alaska Railroad.

A Fine Steel Bridge at Hurricane Gulch on the Alaska Railroad.

Trestle at Mile Post 49 on the Alaska Railroad.

C. P. R.'s New Tunnel at Quebec

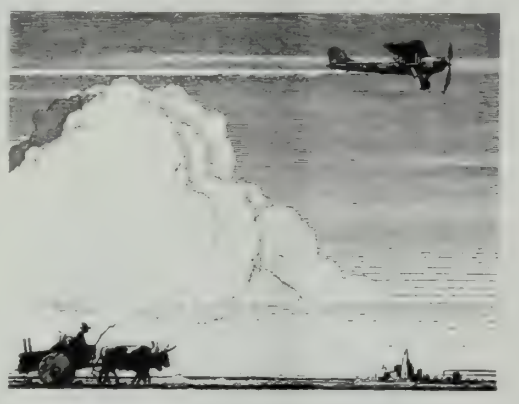
Engineers are rushing to completion the new and important railway tunnel which the Canadian Pacific Railway is projecting to bring its tracks to the new Wolfe Cove ocean terminals, at the ancient City of Quebec, along the St. Lawrence River waterfront. The new line will be a mile and a half in length, branching from the main line of the system at St. Malo and passing beneath the western part of the city to reach the waterfront. Thirty feet wide, with ample clearance for two tracks, the project will involve an expenditure of nearly $2,500,000. It is expected that the tunnel will be completed in readiness for use during the season of navigation in 1931.

Supreme Court of Russia issues order to subordinate courts hinting that death penalty be inflicted on railroad employes for accidents resulting from indiscipline or misconduct.

"If one can stand trouble bravely there is more happiness in looking back to trouble than there is looking back to joy."—*Anne Ellis.*

One Morning's News

IN AN HOUR'S ride, one morning not long ago, coming in from Hollywood on a Pacific Electric train, seated comfortably in a ball-bearing, soft-leather upholstered coach a smooth-riding train that made reading a pleasure instead of a headache, we met a man who never had been on a steam railroad train, never had ridden in an automobile or a Ford, never had been near an airplane although he had seen them in the sky every day; never had been on a steamship; never had been any farther east than Winslow, Arizona, which is pretty far west, should anyone ask you, and still was a veritable encyclopedia of interesting information. Apparently he is what would be called an omnivorous reader. He displayed the liveliest interest in a report that Hart, Schaffner & Marx, or some other motion picture producers, intend opening a news-reel theater in Los Angeles.



"You have no idea," he said, with the cocksureness of 70 years, "you can't imagine what wonderful things are happening. The newspapers—"

"Being an editor," we said, "we are trying diligently to—"

It was useless to interrupt. From a capacious coat pocket a handful of clippings was produced. "In one morning's news," said he, "I have learned things you wouldn't hear about in a month's railway travel. Did you know that in the United States there are 386 establishments classified as manufacturers of rubber goods other than tires, inner tubes, and boots and shoes, 109 classified as makers of rubber tires and tubes, and 22 as producers of rubber boots and shoes, each of which produced commodities valued at $5,000 or more in 1927?"

We admitted that we hadn't read a word about the rubber situation.

"Well, there are," he said, positively. "It's amazing. You think times are dull? Huh! In the 14 cities in the United States having a population of 500,000 or over, $16,930,300,968 was spent for building operations in the 9-year period ended Dec. 31, 1929, as indicated by building permits according to the department of labor. New York City spent nearly 50 per cent of this amount. Chicago, Detroit, Los Angeles, and Philadelphia were the only other cities where the building permits issued in these nine years totaled more than one billion dollars. Chicago's expenditure totaled more than $2,500,000,000 while in the other three the expenditures were less than $1,500,000,000."

We expressed astonishment.

"You talk about economic depression," the man exclaimed, selecting another clipping from the bundle. We denied having said a word about economic depression. "Tell me," he went on, "how do you explain the fact that in the fiscal year ended June 30 nearly 120 billion cigarets were smoked in the United States? To be precise about it, the consumption was 119,935,433,264!"

The only explanation possible, we ventured, was that men and women were smoking. Moreover, 120 billion cigarets did make traffic for the railroads.

Apparently we had pressed another button. Information poured forth. The man knew much about the proposed railroad consolidations and denounced most of them; he knew how many Class 1 roads there are in the United States; spoke of most of the important sections of the Transportation Act of 1920; declared the Recapture Clause to be the rankest kind of Socialism; said things about the Supreme Court that entitled him to ten years in jail for contempt, and declared that any man who would object to paying fifteen cents for an hour's ride in an electric train was a poor fish.

A man entered the car at this moment carrying a half-dead cigar in his mouth. Whereupon the human encyclopedia scowled. "Statistics," he said, "show that cigarets are killing the cigar market. But not fast enough. In the year ended June 30 the country smoked only 6,328,645,852 cigars, nearly one billion cigars under the previous year. What do you think of that?"

"You'd be surprised."

A passenger bus, well filled, went whizzing by. "The motor buses take a lot of business from railroads," said the information bureau, "but they create a great volume of freight in a year to make up for it. Now, consider airplanes — they take business from the railroads and give back nothing. An airplane fleet is built in the East and flies out here. Nothing in that for railroads. A boy 11 years old flew from Denver to Dallas last week as a passenger. A man came by plane from Venezuela to Los Angeles, fellow named Scott, I see by the paper. Made the trip in five days; used a railroad for only one jump from Vera Cruz to Brownsville, Texas—five days for a trip that used to take 19. A man flew from Montana, last week, bound for South America to attend a family re-union. Airplanes all the way except between Ft. Worth and Mexico City. What a world!"

"How do you get all this information together? And is it a fact that you've never been on a steam train?"

"Sure. Why should I travel? The whole world is right here, in the papers and magazines and over the radio. Then our mail service is the most wonderful thing, and the bigger the yearly deficit the better the service. Did you know that, last year, our postoffice department shipped 41,415,732 pounds of mail across the Atlantic ocean?"

We admitted that the fact had not come our way.

"Well, it did. And air mail is increasing every day. So is air express. Ships are crossing to Europe now in four or five days. When I was a boy it took 30 days. You can fly to Kansas City now in 13 hours. Takes a couple of days and nights on the train, I hear. And engines! I remember a little wood burner—"

"And you've never been on a train?"

"Never. Don't have to go on trains. Everything's here. All I have to do is read and look and listen."

As we left the car at the Subway Terminal the old man was just starting a new lecture for the benefit of a young woman who seemed deeply interested. What a wonderful world it is, after all, and what strange creatures there are to be seen and heard; what marvelous things in a morning's news!

There is a profound difference between leisure and idleness.—*Henry Ford.*

Science is true judgment in conjunction with reason.—*Plato.*

The Story of the Street Car

By C. K. Lee

Gen. Engr.
Westinghouse Elec. & Mfg. Co.

An Early Day Trolley Car in New York.

A STARTLED glance was cast at the report that an automobile had made 70 mph. in France. However, if it came to a test of speed, of course, automobiles never could equal the electric car. Look at the Berlin-Zossen tests of 1903!

They are worth looking at, a car the size of a Pullman, on a pair of six-wheel trucks, that reached a speed of 131.4 mph., and, apparently could have gone faster. Its three-phase induction motors totalled 1000 hp., and took current from three 12,000-15,000-volt trolley wires.

However, except for general admiration, nothing seems to come of it. A trolley sleeping car, with four 150 hp. Westinghouse motors reaches 75 mph. out in Indiana (1904), and a car with six-wheel trucks intended for 120 mph., is shown by Stephenson, the carbuilder, at the St. Louis Exposition in 1904. But the sleeper is a commercial failure, and the Stephenson car never attempts such a speed.

There was another exhibit at St. Louis in 1904 whose description reads curiously now. It was intended to be the finest and most expensive trolley car on record, a private car for Mr. Beggs of Milwaukee. A fair-sized party could live comfortably in it. One of the sleeping compartments had sofa, berth, dressing-case, and washstand, and was finished in Hungarian ash. The other, trimmed in Prima Vera, had a folding bed and a writing desk. A sideboard and a fireplace graced the dining room, (in inlaid Philippine rosewood) while the observation compartments at either end were gorgeous in East Indian vermilion wood, and were fitted with upper and lower berth and a typewriter. The kitchen was in quarter-sawed oak, and the toiletroom resplendent in zebra-wood.

But all this splendor was not for the ordinary car-rider, whose accommodations from now on were to become more and more ascetic. Unfortunately, for the street car, it now felt itself a success and a necessity. Everyone set about enthusiastically reducing costs. The years that followed were to see innumerable operating improvements in efficiency, reliability, shop practice, and economy. But the public which rode observed no betterment in the service which was offered it.

As year followed year, the cars were but little larger and no more comfortable, no better looking, no faster.

The plush cushions were followed by rattan cushions, and then by rattan without cushions, and then by hard wooden slats. Some of the seats began to disappear in favor of more standing room, though no one quite had the hardihood to follow the suggestion, publicly made, that the seats be removed entirely. But it sounded efficient.

The efforts made to please the eye disappeared gradually, also the bright colors, the gold leaf trimming, the paneling of selected woods, the decorative mouldings, the bronze light fixtures. The public always liked open cars, but never mind, they began disappearing about this time, although some are still to be found in the fastnesses of New York City. It is true they were accident breeders, but probably could have been made safe had anyone really determined to do it. But it seemed so inefficient to keep up two sets of car bodies! There were repeated efforts at convertible cars about this time, which could be made open or closed at will. They did not take; the industry compromised between closed and open cars, by adopting closed cars, and letting the passengers open the windows.

Trolley parties had vanished long previously, and car riding for pleasure seemed to be waning. The trolley car, which formerly had been in public favor, a sort of popular benefactor, found itself battling demands for reduced fares, and in the recurring labor troubles public sympathy often seemed on the wrong side. The trolley car was under suspicion as being a "malefactor of great wealth."

——This is the third and final installment of a history of street cars prepared for *Transportation* by Mr. Lee. The first installment appeared in June in connection with the yearly convention of the American Electric Railway Association, held at San Francisco.

Modern Street Car, Made Largely of Aluminum, Owned by the Pittsburg Railway Co., Weighs a Little More than 25,000 Lbs., Two-thirds of the Usual Weight.

An epoch-making event occurred in 1908. The Ford Model "T" appeared. It was unnoticed by the street railway industry.

It was about this time that the street car began to be seriously alarmed by the closing gap between rising costs and the stationary five-cent fare. There was no doubt the costs were rising; it had got to the point that an ordinary street car with two motors cost $5000! There began to be a deal of quarreling and bickering, and much annoyance at the hampering interferences of the newly formed regulating commissions.

But if the industry evinced a certain blindness to its human problems, the technical side showed great advances.

About 1906 there were three notable railway electrifications about New York, the New York Central at 600 volts by the General Electric; the Long Island Railways (motor car trains) at 600 volts; and the New Haven, at 11,000 volts single phase, both by Westinghouse. Incidentally, the Long Island electrification included what perhaps was the first portable substation.

These electrifications provoked most spirited technical and personal controversy; nevertheless, all three are still successfully operating in 1930, although 600 volts would hardly now be considered for heavy railway work. Eleven thousand volt single phase remains the form of current supply adopted for the heaviest and most comprehensive of recent electrifications.

Its primacy on interurban roads, however, was but temporary. General Electric brought out 1200 volts direct current in 1907 followed in 1912 by 1500 volts developed by Westinghouse for the extensive Piedmont & Northern. For heavy electrification of railroads the alternatives to 11,000 volts single phase are now, in 1930, either 1500 or 3000 volts direct current, manufactured by both great companies.

A most important improvement in 1904 was oil-and-waste lubrication for motors, which formerly had relied on chunks of grease pushed into a pocket in the bearing. The grease did not begin to lubricate at all until the bearing got hot enough to melt it, and then it was likely to run out very fast. This simple change, which first appeared in the Westinghouse 101-B meant that motors needed attention every ten days or two weeks, instead of every night, and that a set of bearings lasted several years instead of several months. Oil and waste lubrication quickly became universal, being applied even to old motors.

About 1906 appeared another major improvement in the motor; commutating poles, which have ever since been universal. It was a company not connected with the railway business called attention to the value of this construction; the Electro-Dynamic Company, which long had used the construction in stationary motors.

The historian's eye running down the years, and pausing at 1910, finds

—Herbert Photo

Wiesbaden Is the First German City to Abolish Street Cars in Favor of Modern Buses. Thirty-six Were Bought for the First Installment.

car design, unchanged for so long, boiling with novelty. Since the Brownell "accelerator" car of 1891, ideas of passenger handling had not greatly affected car design, further than various gates for safety, and the long rear platform which in some cities, facilitated loading and accommodated smokers.

But in Montreal, in 1905, was born an idea which in the next seven years, set the industry all agog, and developed principles now taken for granted. Instead of having the conductor shoulder his way through a mass of stationary passengers to collect fares, the passengers paid while moving past a stationary conductor. In the original arrangement, the conductor was stationed on the rear platform, and passengers paid when entering, hence it name, PAYE (pay as you enter). But men's imaginations, fired by the possibilities of avoiding accidents and getting all the fares, soon began ringing all the conceivable changes and combinations of the idea. By 1912, the various designs included the "easy access" car, the "center entrance," the "pay-enter," the "pay-within," the "pay-leave," the "near-side"; these were two-man cars, but the general principles then developed have become permanent.

The White Company's Bus Model 54-A, a Club Coach Built for the F. Martz Coach Co., Wilkes-barre, Pa.

The trolley car being found so unexpectedly plastic, other changes followed; the end bulkheads disappeared, and the vestibules became simply a part of the car body. Even the old double deck idea revived, appeared in several specimens, and then quietly again turned its face to the wall. Storage battery cars, likewise, returned to earth for a brief period. Among other places, they were tried on those light-traffic lines in New York City, which were still hungering after a substitute for the horsecar, and finding none. After the storage battery had had its day in court, came a trial of a little gas-electric street car, which likewise passed away.

Out of all this welter of new ideas came another radical change in motors. Women's skirts were tight, women's legs were not to be, for another decade, put on public view; and there came a clamor for low steps. Simultaneously came a realization in the industry of the desirability of low weight. Pittsburgh achieved both aims when a car built on wheels of 24-inch diameter, nine inches smaller than the immemorial standard. This was made possible by a new Westinghouse motor. It created a profound sensation; small wheels and motors built to permit them soon became general, and have for years been standard for city service.

Another very marked advance in motors that same year also had for its purpose the saving of weight; they were arranged for ventilation. It had been gospel for twenty years since the early open motors had disappeared, that street car motors must not be exposed to dirt and wheel wash, but increasing confidence in insulation, encouraging experiments, and a steady demand for lighter motors led the industry to take a chance, and it succeeded. Ventilation very soon became the universal practice, and resulted in motors that were far lighter and smaller, although, it is true, less able

- P & A Photo.

The Trackless Trolley in Chicago. Operated by the Chicago Surface Lines As a Feeder From Neighborhoods Not Served by Street Cars.

to take heavy punishment in the way of abnormal loads.

It was about this time, too, that street cars began changing rather rapidly from wood to steel. Perhaps the first all-metal car had appeared back in 1903, for the New York Subway, quite a time they had finding someone to build it, too! But though a few others followed experimentally (in Milwaukee, for instance), the industry generally considered it a very special construction, and stayed with wood, though they began reinforcing it with steel plates, or an occasional beam here and there.

From this humble start, steel began to creep insidiously all through the car's anatomy, slipping unobtrusively into platform floor, framing and carlines, and coming out boldly as side sheathing. In 1911, quite a stir was created by all-steel street cars as a standard in Pittsburgh (appropriately enough!) and from then on, though the rest of the country did not fall over itself in following, steel became steadily more general, and has now been for years taken as a matter of course. To win attention for progressiveness now, it is necessary to talk about aluminum instead, although, so far (1930), it is still only an attractive experiment.

The period, 1900-1910, now appears the street cars' most prosperous epoch. The industry went into the following decade with unabated energy and confidence, quite unaware of Fate waiting around the corner with a club. The ever-narrowing margin from which it extracted its living became constantly more evident, and its attention was beginning to be unwillingly distracted from the technical problems it had solved so successfully, to clamorous questions of human relations. Traffic congestion began to appear as an annoyance. The spectre of the bus recurred, though it was clearly imaginary, "until some more durable and less expensive material than rubber is found for the tires, and some fuel less in demand than gasoline for the motive power, gasoline buses will scarcely be able to compete on even terms with electric cars" (October 1912). Many a mile of abandoned track, in 1930, disagrees in eloquent silence. Wiesbaden, Germany, has just ceased all street car operation and put on buses.

The public seemed to be getting very unreasonable. There was talk of "anti-corporation prejudice," of "mistaken popular notions," of the newspapers' "mania to make it hot for street railways." Controversy with regulating bodies, with city governments, and with employes filled the air. About this time (1911) is heard the shocking idea that street cars are dirty and noisy, but no one in the industry really considers that faster, quieter, more comfortable, or more beautiful street cars are actually needed, at least in cities. All that really is necessary, it is felt, is to explain this, and tentative experiments at advertising and public relations are made. But there was no real lack of confidence among street railway men.

Interurbans especially carried on. Sleeping cars (successful this time!) appeared on the Illinois Traction, followed by the Oregon Railway. Dining cars began running between Chicago and Milwaukee. The private trolley car made perhaps its last appearance in a gorgeous 55-foot example built for the Beebe system in New York. Freight haulage, growing rapidly, attracted much attention, a life-saver, that was to be, in dark days ahead! Funeral cars, and sprinkler cars, and sightseeing cars, and package express cars still flourished.

As late as 1913 some very fine interurbans were built, the Piedmont & Northern, really in the steam road class; some important roads on the West Coast, and the fast 80-mile Kansas City and St. Joseph line. They are about the last. The curtain was soon to fall on the colorful swift drama of interurban building.

Learned authorities work out formulae by which the patronage of an interurban road can be calculated from the map and the population, formulae shortly to be made absurd by automobiles and good roads.

Then came the World War!

What followed is a story so recent as to be still in everyone's mind. Four years of holding on and suspended growth, waiting for peace and "normalcy," and for those who could not hold on, waves of receiverships in 1915 and '17. Then peace, and the fearful plunge of 1918 and 1919, when a tenth of the country's trolley mileage was in receivership, when an authoritative voice of the industry said officially, "as an industry, the electric railway is practically bankrupt," and when people wondered whether there would be any street cars by 1930.

How the jitneys attacked and were defeated, how Mr. Birney came to the rescue, how small cars and more frequent service came, (and went!), how one-man operation came, and stayed; the tiny Westinghouse jitney-killer motor of 1915 and its offspring; all these are still easy to remember, as is also the slow climb out of the abyss, the general increase in fares, the successive impact of the ideas of bright color, pleasing color, comfortable fittings, of new sorts of drive, pioneered by Timken and by Westinghouse, and now of higher speeds.

Despite the vicissitudes of the electric railway's long life and the recent lean years which have blotted from many minds the fat years of its youth, the end of 1929 found the industry in a very favorable position. The total number of passengers carried, and the net income were both the highest ever reached in any preceding year. Expenditures to the amount of $355,000,000 proved its regained financial standing. To meet its competitor, the automobile, it bought 2200 buses, as subsidiaries. By more efficient operation it made a substantial reduction in expenses. Amid the stock market crash it remained steadfast. Its confidence is indicated by prophecies of still greater revenue for 1930, still further reduction in operating expense.

This story is of the past, but to the writer it seems to have plain lessons for the future: that to stand still is fatal; that not the price, but the character of service, is the decisive point; that no fare, however cheap, makes poor service pleasing, and no fare, however high, is prohibitive if service is sufficiently good. Also that dependence upon increasing savings out of a fixed income finally leads into a blind alley, whereas the path of greater income, based on better service leads to a constantly widening future. Also that in the passenger business, passengers and their very human tastes and feelings are the units of first importance, and that no technical perfection atones for their neglect.

It is plain that the story of the electric car is yet to be a long one. How happy it is to be will depend on its efforts toward speed, comfort, and beauty; preeminence in which was the basis of its success forty years ago.

What is, probably, the longest and straightest piece of track anywhere is in the Argentine Republic. It is 211 miles long, and is without a curve or a bridge.

While the building of new railroads has been practically at a standstill in this country for some years there are actually 630 miles under construction at this time, while 1,186 miles of new construction has been authorized. Most of this new construction is in the way of extensions to lines already in existence.

Youth Is At the Controls

By H. C. Upshaw

Night View of English Field at Amarillo, Texas.

MANAGERS of big industries may not be sitting up nights waiting for young men to arrive with plans for running the business, but air transport certainly does welcome them. Ordinarily, in this comparatively new branch of transportation, the financing, the conferring, the dreary work of making tariffs, and all that kind of routine, is cared for by the gray-headed gentlemen, but youth pilots the ships and risks its life in experimentation certain to be important to the happiness and convenience of human beings determined to go somewhere in a hurry.

Three years ago, or a little less, Harold English was barnstorming in an antiquated plane. Today he is the designer, builder, and owner of one of the largest airports in the country, at Amarillo, Texas. And he is 27 years old. Here is his story.

"A little more than two years ago," said English, to an inquisitive visitor, "I made my first commercial trip, carrying an oil man who said he had to be in Santa Fe that night. I left Amarillo at 12:45 headed west. I was flying a dilapidated old Army H, good for less than 55 miles an hour at best, and carrying only 45 gallons of gas. I knew that we could not reach Santa Fe before dark, and there were no lights at that time for landing there. I also knew that the ceiling of my plane was not more than 8000 feet, and that mountains reaching 10,000 feet into the air lay between me and Santa Fe. Needless to say I didn't reach Santa Fe on that trip, but I did succeed in getting my passenger close enough to go into Santa Fe by automobile on time.

"Compare that trip with the trip we make out of this port every day, covering the distance between Amarillo and Santa Fe in less than two hours, over country that is, for the most part, well marked and well lighted now. Then remember that only a little more than two years have elapsed since I made that first trip."

English looked from the windows of his office on the second floor of his own airport building, across 710 acres that comprise a perfect landing field. Commercial and private planes taxi across that level stretch of land every day now, taking off on a flight from ocean to ocean.

"The lack of facilities at the time of my first trip contrasts strangely with conditions today," he continued. "We left Amarillo that time with our tanks full of gas, with plenty of oil. But by the time we reached Tucumcari, New Mexico, we had to stop for gas. There were no landing fields so we just headed down about three miles out from town, and waited for an hour and a half for gasoline from town. The gasoline with which we filled the tanks turned out to be kerosene, as I suspected when I first smelled it. That meant another delay while we sent back to town for gasoline and tried to empty the tanks of kerosene. We didn't get them completely emptied. I am sure there must have been two gallons of kerosene left in each tank when we filled it the second time.

"All of this delay caused me great anxiety because I was planning to get across the mountains by following the canyons to a low place, and darkness was coming fast. When we finally took off things went well as long as we were flying low and the engine was hot. When we started to climb for the mountains and the engine began to cool it started to complain of the kerosene. It died right over the canyons. There were only two short fields available. I slipped into one of them and came to a stop within a few feet of a 200-foot bluff.

"My passenger was so glad to come out of the plane alive that he forgot he wanted to get into Santa Fe that night. But I was determined to get him in on time if possible. My problem was solved by the only inhabitant of that lonely canyon, a Mexican sheep herder who owned an old Ford.

one that rivaled my plane in age but was more reliable since it took my passenger into Santa Fe on time."

English spent that night in the canyon with his plane, and at daylight discovered he was in a box canyon, a difficult place to get out of at best. He uprooted little cedar trees first to make a run-way, and then he took off, having great difficulty in gaining altitude enough to take him out of the canyon, then headed his plane for home.

"That experience is typical of many similar experiences of pilots everywhere," he continued. "It only serves to illustrate the rapid progress made in commercial flying in the last three years. From an occupation that involved a series of exciting adventures has evolved an organized industry, transportation by air, one that promises to rival the older methods of transportation in the near future."

English was born in Des Moines, Iowa. Four years ago he learned to fly, and a year later became the proud possessor of the old Army H in which he went barnstorming over the Texas Panhandle. After his first commercial trip in this plane he turned his attention to commercial flying, immediately laying plans for the building of his own airport.

The realization of his dreams came last September, when English field, four miles northeast of Amarillo, was opened for business. This airport, both the lay of the field and the buildings, were built according to plans designed by the owner. It is one of the largest airports in the United States, private or municipal, considering the field, lights, and facilities. The port has its own water plant, also a powerful radio station. The outlay, including buildings and planes, represents an investment of $130,000.

The field covers more than one square mile (710 acres), a level stretch that offers a perfect landing field with 60 boundary lights, and marked in the day by yellow cones. The ground is covered with native sod. Four million candlepower floodlights illuminate the field at night.

The main building on the field contains a hangar, offices, repair depot, lunch and rest rooms, and at present, sleeping quarters. The hangar will accommodate the largest ground plane in the United States, and has recently entertained a visiting plane of this type. It will take care of four ordinary tri-motor planes. On top of the hangar a huge Neon sign reading "Amarillo" marks the spot at night.

The repair depot handles airplane repairs for a radius of 300 miles. It is the authorized service station for four makes of airplane engines—Wright, Kinner, Velie, and Lambert. The repair station carries a $15,000 stock of parts and accessories and maintains a crew of licensed mechanics at all times. English Field has five planes, two to six-passenger, used for commercial flying, and in the school of instruction.

D. W. Tomlinson

"As evidence of the steady increase in commercial flying we have been enlarging all departments of our port steadily since we opened last September," Mr. English said. "A new hangar, 60 by 100 feet, is under construction at present. A third story is being added to the main building to increase the office space. Duplex dwellings and two cottages for employes of the port are nearly completed."

Besides the building actually under construction now, plans are complete for a $30,000 hotel building on the field, and work will be started in the near future. The plans for this building provide for an underground loading rack, and a glazed passageway between the hotel building and the landing field for the comfort of passengers.

The Costs in Air Transport

By D. W. Tomlinson

Vice President T.A.T.-Maddux Air Lines, Chief of Operations, Western Division

"How much did it cost?"

That question, or its equivalent, is asked about Ford tri-motored air transports far oftener than one would imagine. Usually the next inquiry is, "what does it cost to run it?"

As few people comprehend the purchasing power of large sums of money, even if nearly all appreciate the value of small amounts, it is my belief that people will better understand figures for an air transport if reduced to comparisons with an automobile.

The original cost of a passenger-carrying airplane used by our organization is about the same as the price of a fleet of 100 low-priced cars, or sixty of medium value. Our air transports average almost 1300 horsepower; approximately that of 50 average-power automobiles.

Gasoline used by the airplane's three motors totals about two and one-half barrels an hour, this being the capacity of six average-size automobile tanks. Enough airplane gasoline for one hour of flight would be sufficient for a 1200-mile automobile trip.

Lubricating oil costs for an air transport are phenomenal in comparison with those for an automobile. The average car uses about six quarts of oil every three weeks. A tri-motored airplane requires twice that much every hour.

Much of the costly checking and overhauling connected with commercial aviation could be avoided if it were possible to know before starting investigation that which has been proved when the work is finished. But there is no known method of establishing the condition of either motors or plane except by rigid inspection. All motors are checked up after every run, tests are made prior to every flight, and it is a rare occasion when these motors are not overhauled within 400 flying hours. The average automobile, in comparison, usually travels more than 20,000 miles before it is overhauled, and it is seldom that intelligent check-ups are made unless motor trouble develops.

The cost of a single air transport motor is about the same as that of a bungalow and lot in an attractive part of the city; therefore, tri-motor equipment represents the cost of three good modern homes.

Air transports require not less than two first-class aviators and a ground crew of high-grade mechanics, all experts in their line, and decidedly expensive in the matter of salaries. Chauffeurs costing as little as $5 a day are seldom found on any but the most expensive automobiles, and thousands of garage me-

chanics are glad to receive one dollar an hour for their labor.

The average life of a modern air transport has not been determined, for none has had time to wear out, although many have been scrapped long before their time on account of greatly improved equipment having been perfected. Various flying organizations and some of the important insurance companies have arbitrarily fixed a lifetime for an air transport, the former to establish a basis for depreciation of the equipment, the latter to set a standard for their charges. This supposed lifetime for an air transport is somewhere around 3000 hours, while many automobiles live and work that many days.

Air transportation is still too new to have settled down to standardized costs; no attempt yet has been made to utilize anything but the finest men, materials and maintenance. The advanced costs of all are justified, and something which the present-day traveler can afford to remember when planning an itinerary.

The Chicago Daily News Tandem-Engined Bellanca Airplane, the Blue Streak.

The Foolish Fears of Flyers

By F. E. Williams

This, my hearties, is the tale of the evaporation of sundry fears and apprehensions. It is written with the thought of being of service to those of you who feel that transcontinental air travel is a fine thing—for somebody else.

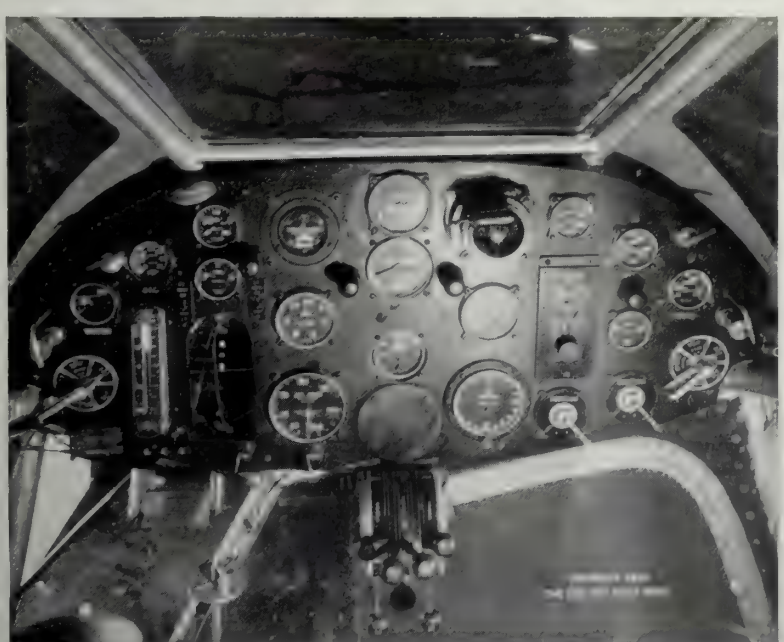
It came to pass, a few weeks ago, that I was invited to a conference in New York City. One week was all I could spare for the round trip, so it was plain that the air-rail combination would have to be used. Let me point out that I knew I would be far safer in a plane than in a car or on a train, as long as the plane was flown intelligently. I have flown planes all over the states while in the army, navy, and civilian organizations. Well do I know the siren call of thick weather as it tempts a pilot to show the folks what a fine bit of blind flying he can do. You who have driven your own car for years know the nervousness experienced when you ride with some one else who takes chances you wouldn't think of taking.

Clouds hung low when my wife took me to the airport, so I immediately assumed the responsibility of deciding whether the plane should leave or stay on the ground. I squinted here and there, rushed into the weather office and got bad news, trotted out and sniffed the air, and had practically decided that the plane shouldn't leave, when a stentorian call of "All aboar-r-r-rd" forced me to hasten into my reserved seat.

I had kissed my wife goodbye with the guilty feeling that I was deliberately depriving her of a means of support, however questionable, and had to console myself with the thought that the insurance premiums were all paid up to date.

In the meantime, we had taken off, and were climbing smoothly in a large spiral toward the cloud layer hanging at the 2000-foot level. While climbing, I noticed that the plane was kept within gliding distance of the airport, so I leaned back in the seat, a very comfortable one, by the way, adjustable to any angle, and went to work helping the pilot look for a hole in the clouds to climb through, praying the while that he would not try to plow up through the soup if he couldn't find a hole. The only ones qualified to point a derisive finger at me here are old pilots who have gone through a similar experience without like reactions.

Great was the relief when we found an opening and spiraled 800 feet through the clouds into a dazzling



Instrument Board of the Blue Streak. Enough Here to Keep the Pilot Busy With Eyes, Brain, Feet and Hands.

world of sunshine spread out on top. Having a pilot's faith in Wasp motors I quit worrying, and picked up the morning paper wherein lay an account of searchers having found my very good friend Jimmy Doles and his wrecked air liner. He had nosed his way into a storm area in an effort to get through, and had flown smack into a mountain while blinded by the snow storm.

By that time, we were at an elevation of 12,000 feet, and were looking down at Lake Arrowhead far below. Then, in a moment, we sailed past Big Bear Lake, which nestled among the mountain tops at an elevation of 7000 feet. The cold must have been intense, as deep snow covered the mountains and the ice on the lake. Our cabin was so warm that we had all taken off hats and overcoats. I discovered with a start that I was enjoying the scenery altogether too enthusiastically, so I looked around inside the cabin for something to worry about. The first thing that caught my eye was a sign prohibiting smoking. I nearly gurgled with joy, as one of my pet beliefs is that an airplane in flight is no place to build fires.

Just then, the pilot turned around to see how the eleven customers were getting along, and we recognized each other with much glee. He turned the controls over to the mate and came back to pass the time of day. After the greetings were over and I had lied about what a fine time I was having, I asked, nonchalantly, whether he would have flown blind up through the clouds if there had been no opening.

Now, mark you, this pilot was an instructor in the navy before the most of us knew the difference between a propeller and an electric fan, and certainly was qualified and able to fly blind all he pleased. I expected him to reply that he would have read his way up through the clouds. "Reading" one's way is vernacular for the process of pulling the head inside the cockpit to read the instruments when all sight of ground and sky is lost. So I was pleasantly amazed to see him look at me with a big grin as he answered, "No, indeed, I'm a great sunshine pilot when I've got a load of passengers." During my last spell of duty at a civilian flying school, I had grown accustomed to being called, "Grandmother," due to my policies of a similar nature, and constant insistence upon things being just so. I had felt an occasional inner suspicion that perhaps I was too fussy, but here was one of the most respected veterans who felt as I did, so I was encouraged to hold fast to the old ideals.

It was becoming fairly hard to find something to worry about, but I finally concentrated upon the fact that we were approaching the section of the West where storms materialize almost instantly out of a clear sky, and that even if we did turn back to avoid one we might be hemmed in by others astern.

Right in the midst of this alarm, the pilot called me forward and handed me a set of head-phones. I could hear his voice as he called to the land station operator a hundred miles away, and could hear the land operator very clearly as he gave a detailed report on the weather in all directions and asked for a report of our position. The pilot told him exactly where we were, and turned to me with another big grin, knowing that I had never heard such communication before. The information we received from the ground station would have enabled us to avoid an area where storms were likely to occur, so I had to return to my seat and manufacture some other alarming situation.

This occupation was held in abeyance when the mate put tables in front of the passengers, and it was plain that luncheon was forthcoming. Among many other things, it included a huge piece of very rich chocolate cake so good that all hands ate every crumb. This turned out to be a mistake for a couple who had looked at the bottom of several glasses before embarking. The excellent luncheon lulled me into a comfortable doze which lasted through a landing at Winslow to change pilots, and on through the afternoon until darkness began to close in.

Aha! Here was food for thought. Suppose the route wasn't well lighted, and the airport no more plainly flooded with light than that upon which I had made my last night landing with a three-engined plane! The port referred to had its lighting system placed by a laddie who knew nothing about flying. The lights shone very brightly in visitors' eyes as they walked along the hangar line, but the surface of the field was absolutely invisible from the air. This line of thought was rudely interrupted by first one big beacon and then another flashing past below us in the darkness, and there went an emergency field that was better lighted than the regular airport mentioned. I was bouncing up and down with appreciation of the evidence of some fine Italian hand in all this, when we circled over the airport at our destination, and found it bathed in a flood of light that would have revealed a dog sitting on any part of it, and he wouldn't need to be a Great Dane, either. Every building and pole in the vicinity was visible, enabling the pilot to approach accurately to a perfect landing.

As we taxied back to the hangar, I was thankful that I knew enough of the technicalities involved to appreciate fully what a multitude of details had been taken care of to insure the successful completion of every flight. The average passenger would miss many of the finer touches indicating intelligent forethought and preparation in every department.

I truly enjoyed the remainder of the trip to New York, where I spent three full days, and was happy until west of the Mississippi on the return trip, when the weather maps inspected at every stop showed storm conditions on the West Coast.

We landed at Winslow for luncheon, being due at Los Angeles at four o'clock, and were amazed to hear that the plane was grounded by orders from Los Angeles, and that we would be presented with Pullman accommodations on a train that would be along in four hours.

There was some discussion, even among the company personnel, expressing wonderment that we were not flown farther west before shifting to the train because the weather was perfect at Winslow. We continued to wonder until about daylight the next morning when we awakened in the region we thought we should have flown to, and found ourselves in the midst of a well developed snow storm. As I lay there, warm and comfortable in the berth provided by the transport company, I decided that the great-grandmother of the aerial clan must be at the helm of that company and believe one who is tolerably familiar with the business, she surely knew her knitting.

If only one person reads this, and is moved to fly across this country of ours I shall feel that I have accomplished a great good, because he will find his heart filled with a great joy at the marvelous thrill of the adventure, and I shall have gained a friend.

"I believe that as a rule we determine our own fate by knowing when to seize the passing chance."—*Myron T. Herrick.*

"You can never supplant judgment by regulation, for it is only through experience that we learn."—*Colonel C. M. Young.*

Editorial Comment

The Breaking Day

MOST MEN, said some wise thinker, are three-fifths genius and two-fifths fudge. About a year ago, wherever one listened, always the talk was about the wonderful prosperity. People talked in thousands who seldom or never had owned a hundred dollars at one time that could be called their own. Men stood in hotel lobbies and on street corners gabbling and setting down figures in little books—profits they never had and never would have. Paper profits. Imaginary winnings. Not a sane thought about the day of reckoning. Hapless victims of what a keen-witted writer in San Francisco called Profitless Prosperity, adding, very sensibly, that now they must come to the front and help in creating what can be made a Profitable Depression.

The old shop-worn terms will not explain away what some call the depression. Psychology and trends toward this and that mean very little. What is needed now is not only reasoning, but reasonable men, men who know that what we are living through, what indeed we have *lived* through was and is an unusually long-delayed period of readjustment as inevitable as tomorrow's sunrise. Politics, endless tariff debates, party chicanery, these have had something to do with creating this reduced speed in commerce and industry, but mainly it is as unfair and senseless to blame everything bad on Mr. Hoover and congress as it would be to charge them with responsibility for the prolonged hot weather. Men are crying over the loss of something they never had in their hands, grumbling over the low prices of commodities which have been unjustly and wrongfully high for ten years, commodities only now getting back to their proper plane. What such men must do, and will have to do sooner or later, is charge off in their ledgers all these nightmare winnings that represented nothing; and the sooner they do it the better for themselves and the country.

Just when everything is going to the dogs as fast as the grumblers can arrange it in their Hammer and Padlock Clubs, along comes the Western Pacific and the Great Northern with contracts for $10,000,000 worth of construction on 112 miles of road from the North into California!

As if this were not enough to bring yelps of woe what does the government do but begin letting contracts on the first $10,660,000 worth of work on the gigantic Boulder Dam!

The Southern Pacific announces it has bought the Cotton Belt, a line 1,800 miles long, probably because it never expected to make money with it; the Pennsylvania Railroad continues an electrification project that will cost $100,000,000, and the Lackawanna goes on with its immense suburban electrification to cost many millions more—work for many men.

In the midst of the blue spell it is well to remember that in the first quarter of this year the railroads of the United States spent for equipment, additions and betterments $223,772,000, an increase of $96,653,000 over that period in 1929, and $95,344,000 than in that period of 1928. Does this look like hard times?

You know the Superheater Company? Naturally. That company recently reported for the six months ended June 30, a net profit of $2,435,677 compared with $2,209,810 in the same period of 1929. Not so bad in a "depressed" season?

Right behind this report comes another note for the Pessimists of Profitless Prosperity showing that the Southern Pacific has asked the powers in Washington for permission to buy another railroad. This time it is the property of the Gulf & West Texas which is constructing a line between San Antonio and San Angelo. By a contract between the Southern Pacific and the West Texas stockholders, the trunk line will pay $50,000 for all outstanding common stock of the small line; will pay all operating expenses, assume its indebtedness and finance construction of the 113 miles of line.

This looks pretty bad for the joy killers, but there is more to come. Hardly had the Hammer & Padlock Club met the other day before word was received that the New York Central had put 6,000 men back to work in the shops; the Ford Motor Co., had resumed production; the Van Sweringen lines had contracted for 58,600 tons of rails, and there were indications that other railroads would place their annual requirements earlier than usual. The New York Central is expected to inquire for 200,000 tons, the Pennsylvania for 180,000 and the Reading for 35,000 tons.

The air transport companies, with increased rates, report much larger business than ever. Tulsa, Okla., says more than 7,000 persons leave or arrive there every month by airplane. Men and women do not use this expensive form of transportation when they are short of money. And there is no boom anywhere in the oil business. At times the air passenger business of Tulsa has exceeded that of London, Paris and Berlin combined. Air traffic across the continent is increasing so rapidly that one company flies extra planes daily and several new companies are forming.

In the automotive field business is active. R. W. Woodruff, president of the White Motor Co., says, "Only twice before in the history of the automotive industry has the entire production output for the first six months of any one year exceeded the figures of 1930. The general slump in business, in my opinion, has been greatly exaggerated. Conditions will show a decided improvement when all of us get back to normal vision, normal standards of comparison, and normal acting. When we adjust ourselves to conditions, the conditions will improve and the sooner we realize that business is what we make it the better off we shall be. There has been no unemployment problem in the White factory."

Labels

Webster's reference book defines a label as a slip of paper affixed to anything indicating its contents. Somehow or other we always think of labels in connection with bottles, and our faith in them has materially weakened since the advent of prohibition. There is no question that the Pure Food and Drug Act has its advantages in requiring a label on various products to indicate their laboratory analysis. We have never felt, however, when making purchases in a drug store, that the label, despite the fact that it

carried the laboratory guarantee, necessarily meant that the product would cure the particular disease.

The American Railway Association has been proposing a certificate of approval for draft gears that meet its laboratory tests, and we cannot seem to feel in sympathy with this idea. A laboratory certificate certainly is not a guarantee that the gear certified necessarily will meet your operating conditions, nor will the certificate be of much assistance if a gear sticks in service.

In his address before the Mechanical Division in June, Mr. Aishton said: "You have made tests at Purdue University and prepared specifications, but nevertheless, in my judgment, equally important with this power-brake investigation, is a continued detailed intelligent study of this problem of draft gears." Mr. Aishton's remarks seem to indicate that only a fair start has been made on the problem of the draft gear, and that further studies and tests must be made, beyond those of a laboratory character, to determine the value of the specific gears. Therefore to issue at this time certificates for draft gears showing that they comply with certain laboratory tests seems to be about the same as the laboratory label on a bottle insofar as its value goes.

To require a label showing the laboratory contents on various medicines and food products probably is necessary to protect the health of the people, but we dislike to cheapen engineering brains by issuing a certificate or label for a mechanical product to assure its reliability. Mechanical men certainly are big enough and able enough to determine for themselves the merits of the various draft gears, and to find out if they meet their own particular problems to the best advantage.

There are other dangers mechanical men are building up for themselves under such a process. Will they not meet the argument from the purchasing department that all gears carrying the label are equal, and therefore that the gear which is the cheapest should be ordered? Then, too, the mechanical officers must not forget that their compensation is based on two things: First, their engineering knowledge, experience and education, and secondly their executive ability. If by concerted action these officers are agreeing to standardize and label products, isn't there a danger in this of reducing the value of their services to the company employing them?

We are not minimizing the value of the draft gear tests at Purdue University. They supply a fund of data and information to the engineers which can be used as a guide in further studies and tests of draft gears. But to agree that the present tests are conclusive, and to label them, particularly without going into more exhaustive road and operating tests, certainly seems a step in the wrong direction.

We believe the label can continue to serve its greatest advantage when limited to bottles and package goods. Even then we have learned to be skeptical regarding the value of the label when some of our best friends point to it as an assurance of merit in what they are offering us.

The Passing of Two Pioneers

Twenty years ago Glenn Curtiss, who died unexpectedly July 23, startled the world by making an airplane flight from Albany to New York. The trip, was made in 1910 for $10,000 offered by the New York World. He made two stops with his "box kite" plane, and finished his journey at Governor's Island, having covered the distance of 150 miles in two hours and 51 minutes. Twenty years later—a few weeks ago—he made the same flight in a huge modern Curtiss Condor capable of carrying 20 passengers.

With the exception of the Wright brothers, no other man did so much for American aviation as Glenn Curtiss. After the pioneering phase of aviation had passed he turned to the commercial side and was one of the leaders in developing the airplane as it is today. The Curtiss Airplane Company, of which he was the head, built many airplanes for the United States and foreign governments and for private companies and individuals.

Two days after the death of Mr. Curtiss another pioneer in aviation, Chance Vought, died at Southampton, Long Island. He was the designer of many fighting planes and developer of the first standardized planes capable of withstanding the stresses of "shooting" from catapults on floating aircraft carriers. At the time of his death he was president of the Lewis & Vought Corpn., which he organized and which became this year a division of the United Aircraft & Transportation Company.

This Will Be Good

Senator Howell of Nebraska, an advocate of government ownership displays much courage in asking the United States senate to investigate the Alaska Railroad. The people of this nation have poured many millions into that delectable project, without knowing it. The inquiry probably will be undertaken by Senators Howell, Thomas of Idaho, and Kendrick of Wyoming.

It isn't safe to say just what this government railroad has cost, but it has been a very large amount. No particular criticism attaches to the men who have been managing the property. They were trained railroad men. The road is popular, as it ought to be, among the handful of men and women in that Far Northern province. But the building of the line, the influences affecting the government's decision to build, the endless costs, these are matters of very wide and deep interest. The outcome of the hearing will be watched with keen interest.

The Helpers

Once more the railroads are to be asked or directed by the government to reduce their freight rates to help the farmers of drouth-stricken regions. A year or so ago the same action was taken. To put it plainly, the owners of railroads who are men and women in many walks of life must give to another class or industry. Is it too much to expect that owners of truck lines and steamships, and even the government's barges on inland waters may be drafted for the same purpose? In great national crises the railroads always are the first dependable helpers. We all like to have a man out to dinner occasionally but we don't like the idea of taking in deadhead boarders.

It would be interesting to hear what the railroad stockholders think of their own enforced philanthropy. For, of course, they have nothing to say about it. What a life they do lead, these stockholders! Word reaches them one day that the commission in Washington has authorized rate increases certain to yield $15,000,000 a year. Mr. and Mrs. Stockholder

go to the movies that night. In the morning the papers tell of a rate cut by the commission that will cost the roads $12,000,000. O well, says the Stockholder family, we can still eat. And then, to the despair of the whole outfit, the President asks the roads to help the distressed grain farmers or those in flooded or drouth-stricken regions. And the rail executives with the liberality for which they always have been famous, call on the President at Washington and tell him, modestly—only 25 or 30 reporters and camera men being permitted present—that the railroads certainly will help the farmers. Which reminds us of the New York *Sun's* comment, a few days ago: "Farm relief," said the *Sun* always consists of sticking up someone else." After the farmers have been well helped it is to be hoped someone will remember the idle shopmen here and there.

The Original Advertiser

Recently the advertising manager of a nationally known concern which carries a full page in many of the national magazines, said that his concern was sixty days behind on orders—new business.

"Why do you continue to advertise, if you can't take care of your present orders?" he was asked.

"The concern that does not need advertising today," he answered, "can afford to advertise for the day when it will require new orders—more business. Intelligent, effective advertising is never thrown away. It is nothing more nor less than insurance against the loss of business for which our competitors are continually fighting."

And here is the moral:

The original advertiser was a clam. He opened his mouth when he wanted something to exist on. Business lives on orders, hence business must open its mouth—advertise—to live. If it doesn't, it will die, just as the clam dies, when it keeps its mouth shut.

The Rising Generation

Mrs. Martha Presser is 81 years old an age when, if travel becomes necessary, some slow and steady vehicle is selected. But not for Mrs. Presser. She landed a few days ago at Croydon Airport, London, from Germany after her first airplane trip.

Reporters, buzzing around excitedly, flashed the customary inane questions. How did she like it? Wasn't it marvelous?

"Very dull," said Mrs. Presser, as sophisticated as a graduate just home from college. "I thought those things had speed."

What can you do with such an old lady?

The Costly Falsehood

One of the most widely read newspaper columnists in the United States said, a few days ago, that a hundred ruined farmers had compelled an Ohio road department to give them work where individuals had failed to get anything. "Some of the 'best minds' will say these farmers bullied the officials into favorable action. These same 'best minds' will not protest," said the columnist, "when railroads say to the Interstate Commerce Commission 'We are not making enough money. We need higher rates.' And they get the higher rates."

This may not be a deliberate falsehood. It may be chargeable to lack of proper information. But whatever the motive or the reason it is a most subtle and dangerous piece of writing. This danger is increased, too, by the fact that probably 15,000,000 persons will read that paragraph and believe that railroads have only to ask the commission for higher rates.

Four hostile newspapers, said Napoleon, are more to be feared than a thousand bayonets. In these modern times one falsehood in a newspaper does an injustice that columns can never undo. If the I.C.C. has ever shown any excessive liberality toward railroads the fact has not been disclosed to the public.

The Growth of Air Transport

Passenger carrying airplanes in the United States are now flying 91,361 miles a day and are serving 226 communities on 263 regular schedules, according to the half yearly report of the American Air Transport Association. A year ago 61,025 miles were being flown and passenger carrying aircraft stopped daily at only 151 points. Thirty-nine companies are listed in the report as operating regularly. There were 21 a year ago. The passenger airways system has increased from 25,000 miles to 32,803 miles. Lighting of the airways, making night passenger and air mail operation possible, has increased during the past year to 16,000 miles from 12,000 twelve months ago.

Marked progress has been made in equipping the airways with radio facilities whereby pilots receive weather and other operating information while in the air from ground stations at strategic points along the routes.

American-owned and operated mail and passenger planes are flying over 12,476 miles of Mexican, West Indian, Central and South American airways. Nineteen countries are connected to the United States by air, and planes are flying more than 26,000 miles in those foreign services.

The Futility of Petitions

Iowa has joined Minnesota, North Dakota, Montana and the state of Washington in demanding that the Interstate Commerce Commission cancel its conditional approval of the Great Northern-Burlington-Northern Pacific consolidation. In practically all parts of the Pacific Northwest opposition to the proposed merger is growing. In Minnesota the state railroad commission's chief engineer, D. F. Jurgenson, leads the protesting forces. Mr. Jurgenson is working diligently. Minnesota, he says, has prevented mergers twice. "We think this one would be a tremendous blow to the Northwest," says Mr. Jurgenson.

The federal commission's national plan of consolidation also is very generally opposed, many persons fearing, doubtless, that it may have been too hastily conceived, only nine or ten years having been given to its preparation. All the efforts of railroads, chambers of commerce, civic leagues and trade associations in various parts of the country to bring about modification of the plan have failed. In an order announced July 22 the commission denied the petitions of the various organizations for further hearing, reconsideration, and modification of the plan.

The reason given by the commission for making a sweeping denial of all the petitions received since the promulgation of the plan last December is that "the petitioners may be fully heard when and if formal application is made to give effect to the plan of consolidation or any part thereof."

Obviously, it would take all the wisdom ascribed

to Solomon of old to evolve a plan of consolidation agreeable to all people. The commission's attitude toward petitions was shown decisively when the Western Pacific-Great Northern extension into California was proposed. At that time the railroads involved were requested to cease their efforts in organizing communities for or against the application by petitions from chambers of commerce. To one on the outside looking in it is difficult to understand why the commissioners prefer to listen to the dreary time-killing pleas of lawyers rather than consider the tabulated expressions of the people by petition. Of course the people still have this right, no longer sacred, if they care to exercise it. But they might be more profitably employed in praying for rain.

Waterways the President's Hobby?

We have hoped for many years that some time we might have the ineffable pleasure of sending something back to a magazine editor—something he wanted us to publish. And here, with the moment at hand, we have to accept the offering.

The American Mercury's contribution is altogether too important to be rejected. It is a special article by J. G. Lyne appearing in the August issue of the Mercury under the title, "The Railroads Gird for Battle," and you can not afford to miss it, even if you have to buy the magazine. We don't intend to quote enough of it to spoil your evening's enjoyment when you get your copy, but it is impossible to deny ourselves these paragraphs. Mr. Lyne is a former professor of something or other, and has attracted attention with many sensible articles on transportation. As to President Hoover and waterways, for instance, this writer says:

In the White House sits a Great Engineer, a man who, however ignorant of political chicanery, has at least been expected to bring the experience of his craft and the principles of sound economics to bear on the problems of the day. This engineer has graciously acknowledged the improvement in railroad service and its importance to general economic well being. However, he likes to build dams, waterways, canals and spillways. The construction of such works on a miniature scale, so the newspapers inform us, is, along with fishing, his chief outdoor sport.

No one could object to his enjoyment of such clean fun, but the President's almost lascivious delight in waterways does not stop at the infantile stage. He is riding his hobby on an adult scale in his advocacy of turning every cow-pasture creek into an improved waterway for barges and towboats—at the expense of the taxpayers—and scooping out the St. Lawrence River so that Atlantic shipping may deposit its smuggled wet goods and French postcards directly on the Chicago quays, bearing back to Europe the grain of the prairies, to the huzzas of the grain growers and votes for Herbert in 1932.

It matters not that the St. Lawrence canal, which, according to the higher disinterested authority, Dr. H. G. Moulton of the Institute of Economics, to reduce by four cents a bushel the cost to grain shippers of moving grain, would cost the taxpayers approximately 11 cents a bushel. These and other facts clearly raising grave doubts as to the economic soundness of the project were set forth by Dr. Moulton in a book on the subject which, presumably, the great protagonist of the waterway must have read. Yet he has made no effort to answer any of these criticisms of his favorite policy beyond the terse and un-elaborated statement that the project would cost $200,000,000, as compared with Dr. Moulton's estimate of $712,000,000, which was set out with detailed supporting facts.

The sad aspects of the situation, from the standpoint of the railways, is that the President's severest critics, whose suspicions are lively enough where appointments or treaties or prohibition are concerned, never think of looking behind his policies when scientific or economic considerations enter into them.

The author of this article quotes the conclusions of Mr. R. Bell, general manager of the London & North Eastern Railway, after an investigation in this country. Mr. Bell said:

One would imagine that the Interstate Commerce Commission should govern with a loose rein that it may govern at all. Actually its interfering hand seems to be everywhere. It has never been troubled by many qualms about its own omniscience, and has recently shown signs of aspiring to omnipotence. . . . We often talk about government restrictions in England, but really we are as free as air in comparison with our brother railwaymen across the Atlantic.

Enough has been quoted to stir your interest. There is much more.

Railroads, Shock Absorbers

Speaking at Milwaukee, one night last January, Commissioner Meyer of the I.C.C. said of the infamous Hoch-Smith Resolution:

"I might summarize what appears to me the underlying theory of the resolution by saying that it attempts to make the railroads of the United States the shock absorber and balance wheel of the entire economic life of the country to the extent to which this may be accomplished through the instrumentality of railroad rates."

The quotation comes to mind now in connection with the resentment of California deciduous fruit shippers over the recent decision of the Supreme Court which, in effect at least, made the resolution inoperative if not actually unconstitutional. At least a hundred Solomons, the commissioner said, would be needed to apply the resolution properly if such a thing were possible.

Sure, They Want A Railroad

The governor of Wyoming, Mr. Emerson, asks the Burlington to build an extension into the Riverton reclamation project, on which the federal government has spent about $4,000,000. Will Wyoming guarantee that bus and truck lines will not be authorized immediately after the Burlington has spent its money to help the people? It will not.

American Engineers in Russia

Recent dispatches say that more than 600 American engineers are working in Russia and by the end of the year, it is expected, there will be about 1,000.

Experts in railroading, agriculture, reclamation and construction of all kinds have been drafted by the Soviet in its tremendous five-year program of industrial expansion and economic development.

What Does Will Rogers Say?

Chewing gum has been officially classified as a commodity of higher quality than candy, so far as freight charges are concerned. The decision announced by the Interstate Commerce commission, will not be entirely to the satisfaction of chewing gum makers and dealers, however, since it justifies the express companies in charging higher rates for chewing gum shipments than for candy.

The express companies may apply first class rates to chewing gum but will continue to classify candy as a second class shipment taking lower rates.

Chewing gum interests, in attacking the classification, attempted to establish that chewing gum was a food.

The Rates and Prices of 60 Years

Average Revenue Per Ton-Mile Only a Little More Than 1 Per Cent Above 1885

By Lee G. Lauck

Economist

CHANGES in freight rates interest most persons because they have a bearing upon the prices of things they buy and sell. Increases in freight rates normally are supposed to raise the price which the purchaser pays or depress the price which the seller receives.

During the greater part of the last 60 years there has been some agitation for reduction of freight rates upon the ground that they have been needed to promote the prosperity of the country or the prosperity of certain industries. All this agitation has been predicated upon the assumption that freight rates have an important effect upon the development of industry and the movement of commerce, and that because of the nature of the railroad business they tend to increase as much as or more than the prices of commodities.

The fact of the matter is that the service rendered and the rates charged by the railways never actually have been, except, perhaps for short periods, inimical to the nation's progress. The indisputable facts of history show that over a period of years freight rates in this country always have declined more or advanced less than the prices of commodities in general.

Statistics compiled and published since 1870 make possible a comparison of changes that have occurred in commodity prices and freight rates for 60 years. It happens that the Aldrich report to the senate in March, 1893, published tables of index numbers showing changes that occurred in average wholesale prices of all the groups of commodities from 1870 to 1889, and the bureau of labor statistics publishes similar index numbers for wholesale commodities from 1890 down to the present. The year 1885 has been selected as 100 in the compilation of the index numbers.

The average revenue received by the railroads for hauling a ton of freight one mile is shown by the solid black line on the accompanying graph. It has been obtained for each year by dividing the total revenue ton-miles into the entire freight revenue collected by the railroads. The figures for 1870 to 1900 are taken from a report of the department of agriculture dated 1901, and prepared by H. T. Newcomb; those from 1901 to January, 1930, are taken from the Interstate Commerce Commission statistics. The year 1885 was taken as the base year in preparing this index number, as in the price index. This year was chosen as the base year because its selection gives the two lines representing the movement of prices and freight rates the most points in common, and therefore makes them easy to compare.

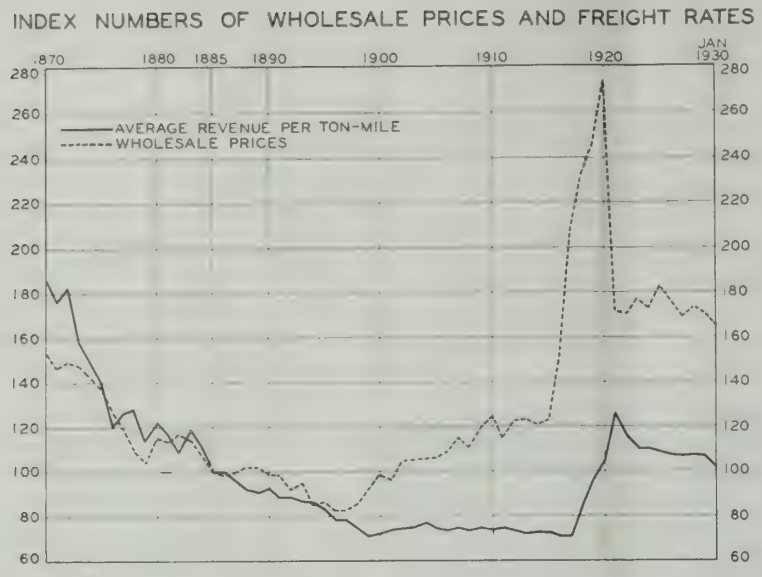
Entrance to the Dining Room, New North Broad Street Station of the Reading Railroad At Philadelphia.

A study of the figures is most illuminating. The most striking fact disclosed is that while the average revenue per ton-mile of the railways of the United States is now only a trifle over 1 per cent higher than in 1885, the increase being from 1.011 cents to 1.074 cents, the wholesale prices of all commodities average 65 per cent higher. Yet, during the last 45 years there has been scarcely a time when there has not been strong agitation for government action of one or more kinds to cause reductions or prevent advances in railway rates upon the ground that existing rates were, or proposed freight rates would be, an intolerable burden to some industries or all industries.

A glance at the graph, which indicates the movement of average revenue per ton-mile and average wholesale commodity prices from 1870 down to January, 1930, shows that prices have gone through two major movements during the last 60 years. From the early seventies to 1897 the trend of prices were steadily downward. There were brief rallies in 1872, in 1880, 1882, 1887, 1888 and in 1893, but these were superseded quickly by prolonged declines. Prices touched bottom in 1896 and in 1897. Thereafter they rose until 1910, when they were halted for a brief period. From 1917 to 1920 war demand and the post war boom carried them to an unprecedented peak. The depression of 1921 caused a percipitate fall. The lowest point in this decline was reached in January, 1922. Thereafter prices rose until April, 1923, after which time they showed a recession. They gained momentum again in 1925, moved lower in 1926 and in 1927; advanced again in 1928; and the level at the end of January, 1930, stood a trifle above the price level of 1870.

In 1885 the average freight rate was more than 87 per cent lower than it was in 1870. Fourteen years later, in 1899, the average freight rate had made a further decline of nearly 29 per cent. Thereafter freight rates remained at the depression level of the nineties until 1917, a period of 18 years, while prices were rising. The increase in freight rates did not begin until 1918. When it did occur they did not rise as fast nor as far as prices had risen. Since 1921 they have again fallen.

When the largest advance in freight



rates in history was made in 1920, the wholesale prices of all commodities averaged 172.8 per cent higher than in 1885. This advance in rates having been made late in 1920, it was not in effect throughout a year until in 1921. Meantime prices had declined. The figures in the graph show, however, that even in 1921 the average freight rate was only 26.1 per cent higher than in 1885, while the wholesale prices of all commodities averaged 72 per cent higher. As a result of subsequent changes in rates and prices, the average freight rate at the end of January, 1930, was only a trifle over 1 per cent higher than in 1885, while the wholesale prices of all commodities averaged 65 per cent higher.

During the last 25 years the railways have never received a return even approaching that which other industries earned. As a consequence, the dividends during a greater part of that period have been inadequate to attract capital, and the managements, in their endeavor to serve the public, have taken the meager earnings of the stockholders and employed them to provide facilities for the public.

It is astonishing that an industry for which such a showing can be made should have its rates under constant attack upon the ground that they are burdensome to one industry after another whose prices have increased much more than railway rates.

This history of prices and freight rates during the last 60 years constitutes an unanswerable argument for a policy of regulation in the future that will encourage ample investment of capital in railway improvements. Unfortunately, it appears that many who regulate the railways think the only way they can save the public money is by regulating rates regardless of the ultimate effects upon the improvements essential to the greatest operating economy.

A Portable Sub-Station

Although full automatic sub-stations on wheels are no longer a novelty in the transportation field, yet the new type portable station which the Missouri Pacific recently put into commission to serve sections of its system which have not developed sufficient traffic to warrant stationary stations, introduces several novel features in full automatic portable sub-station practices, and effects new economies.

Of 500-kilowatt, 600-volt capacity, unusual features especially adaptable to the diverse needs of the lines, are incorporated in the new car. During transportation the motor generator set is carried on a three-point suspension for the sake of easy riding, and is secured to the car frame by four jack screws while the set is in operation. The heavy current limiting resistors commonly used for shifting direct current on stationary automatic stations, are eliminated by using a small resistor in the separately excited generator field. This results in an appreciable saving in space and weight, important in a portable car. The switchboard is isolated from the car frame to protect meters and relays against vibrations and shocks en route. Fully automatic in operation, after it is spotted and connected to the supply line and trolley the unit requires no attention save for occasional inspection and oiling.

Power is taken from the 33,000-volt, three-phase, 60-cycle supply line, fed through a three-phase step-down transformer to the 2300-volt, 710-horsepower synchronous motor, and delivered to the trolley from the direct connected 500 kilowatt, 600-volt generator. All high tension equipment, as shown in the illustration, is outside the cab, protected against tampering and accidental contact by a high wire enclosure. About a ton of grid resistor weight is saved by use of a novel method for shifting the direct-current load on the station; this also eliminates energy losses which occur in the grid resistors during periods of load shifting.

In the past it has been a common practice to control the current

The Missouri Pacific's Portable Sub-Station.

output of a station by a heavy resistor automatically put in series with the main bus. The new portable uses instead a small load limiting resistor in the separately excited generator field circuit. Automatic over-current relay places the resistor in series with the field, lowering the generated voltage and reducing the load on the generator, when the load reaches an excessive valve. Until now this method of load shifting was not feasible, since it resulted in the machine being shut down or reverse current from other stations, in case of an overload, being dropped with the machine at low voltage. This was surmounted by the development of a new scheme of separate excitement and field forcing which effects rapid recovery of voltage. The apparatus is small and light and the saving of energy material.

No blowers or other means of forced ventilation is necessary under a unique method whereby the rotating machinery itself draws cool air in through floor gratings and expels the warm air through openings near the roof. The warm exhaust air from the motor is carried out through the cab roof by means of a large air duct. This new portable outfit is expected to solve the problem of providing power to lines during seasonal loads, or to new sections of track until such dates as the volume of business warrants a permanent sub-station.

A New North Coast Limited

After a year in construction, the Northern Pacific Railway has put into commission, a new edition of the North Coast Limited, its de luxe transcontinental flyer between Chicago, St. Paul, Minneapolis and North Pacific Coast Cities. It was just 30 years ago this spring, in April, 1900, that the original North Coast Limited made its debut. This was the first limited, electric lighted train in the Northwest, and its beauties and luxuries were commented on all over the United States.

The North Coast Limited of 1930 is the third edition of the flyer. It is an all-Pullman train embodying the latest developments in construction, furnishings and decorations. All passenger cars are roller-bearing equipped. Forty cars have the axle unit type in which the wheels revolve and the axle is stationary. Twenty cars bear the type in which the axle rotates within roller bearings in the journal boxes. The axle unit type on the 40 cars is so constructed that should the roller cease to function for any reason the cars can proceed using the standard friction bearing and correlated parts which are installed in addition to the roller bearing units. Pullmans are of the 10-section, one-drawing-room and one-compartment type, with exceptionally large dressing rooms. The compartment and drawing room may be used *en suite* if desired.

Observation Car on the New Edition of the Northern Pacific's North Coast Limited.

A newly designed archway is used in the Pullmans to remove the tunnel-like effect sometimes noticeable in a long car. Improved box springs are in both lower and upper berths.

Dining cars are of the 12-table style, seating 36 persons. Long window drapes are a new note in decoration. Temperatures in the diners are thermostatically controlled. Several new mechanical and specialty features were employed in these cars, including: Entire body of kitchen range built of monel metal; duralumin metal floor racks in pantry; rolled steel wheels; bolster springs of chrome vanadium steel; equalizer springs of high silicon material; passageway side doors and end doors of mahogany, faced on exterior with aluminum. All observation cars are radio-equipped, and furnishings are of a quiet richness.

What the Fast Ones Are Wearing

To the color pronouncements for early summer, add this one: "The ultra-smart passenger train of the West will wear an attractive outer coat of pearl gray." This color for outside finish, in keeping with inside colorings of cream and light green, has been adopted for Southern Pacific's "Daylight" flier between San Francisco and Los Angeles on the scenic coast line of the railroad.

Painted pearl gray from locomotive to observation platform, the limited has just appeared in its new "dress". Coincident with the adoption of the new color scheme, in sharp contrast to the standard dark green of railway coaches, improved equipment was placed in service on the train, featuring a new-type club car with separate lounge and smoking compartment for women. The flier also carries an observation car of special design, with full-width rear doors and extra large windows to give an unobstructed view of ocean, mountains and valleys on the journey between San Francisco and Southern California.

He who would do some great thing in this short life must apply himself to work with such a concentration of his forces that to idle spectators who live only to amuse themselves it looks like insanity.—*Parkman.*

There are few, if any, industries requiring so large an amount of new capital in order to keep up with the demands made upon them as that of transportation. Since January 1, 1920, the railroads have invested $7,500,000,000 on capital account, which is an average of $750,000,000 a year, or over $2,000,000 daily.

The railroads of the country paid out $5,595 per minute for labor and $776 for taxes last year.

Contract Awarded For Line

A CONTRACT for the 112-mile line to be built by the Western Pacific from Keddie to Bieber has been awarded to the W. A. Bechtel Company, San Francisco, and the Utah Construction Co., Ogden. The contract provides for the clearing of 1,500 acres of right of way. The project will cost $10,000,000.

Construction of the Great Northern's section of the Keddie-Klamath Falls line, ninety miles, connecting with the Western Pacific at Bieber, is expected to start early this fall. The Great Northern has not announced whether it will do the work by contract or on its own account.

In the meantime the McCloud River Lumber Company is pushing work on the extension of its Hambone-White Horse branch from the latter point to near Lookout, where a connection will be made with the proposed Great Northern extension.

The Hambone branch has been rushed in anticipation of the construction of the Keddie-Klamath Falls line. Being at the approximate center of the big construction job, the Hambone branch, which leaves the McCloud River Railroad near Barton, will be used for handling material, machinery and general supplies.

The new branch, Hambone to Lookout, will be taken over by the Great Northern and Western Pacific on its completion. By decree of the Interstate Commerce Commission, the Western Pacific has trackage rights over the Great Northern, north from Bieber to the connection with the branch line.

Congress and Holding Companies

Men who know what is going to happen, or believe they do, say the 71st congress, meeting in December for the short session, probably will dispose of the railroad problem of control of common carriers by holding companies and investment trusts. The next session, the 72nd congress, these wise men say, probably will legislate for voluntary consolidations of railroads.

Representative Rayburn, who has been active in preparing the railroad information, says there are legal questions about just what power congress has to control state corporations in connection with its interstate transportation powers. "Congress," says Mr. Rayburn, "must determine how far it, congress, has to control state corporations in connection with its interstate transportation powers and Prof. Breckinridge is getting up briefs regarding the power of congress in this connection which will be submitted to the house when the committee, at the coming session, makes its report on the investigation.

"Congress must determine how far it can go under the federal Constitution and then how far it ought to go with respect to lodging power in some governmental authority, presumably the Interstate Commerce Commission, to control acquisitions of railroad securities. It is hoped by the committee that the report on the investigation may be completed in time to consider the subject at public hearings during the December session, with a view to some legislation on the subject at that session."

Mr. Rayburn says there are about 700 investment trusts, of which only about 100 are of any major importance. It should be borne in mind, in connection with this investigation, he said, that holding companies directly hold stock or other securities in the railroads while the investment trusts hold stock in the holding companies.

"I think the contemplation of congress has been that the 19 or 20 railroad systems should be under separate ownership and control," he said. "About nine of the proposed consolidations of railroad systems are west of the Mississippi River, seven of which touch Texas. If those systems are under separate ownership and control, then we have real competition and service, but if three or four of them, or all of them, are under common control, there is no competition. I find there are 110 investment companies that have a capital of more than $5,000,000 each and that 50 of these hold railroad voting securities. And furthermore, one of these investment companies holds stock in 50 railroads, which means through holding companies.

"An investigation of the Van Sweringen interests has revealed that they have more holding companies than the Alleghany which the Sweringens control. The Alleghany and the Pennroad holding companies are the principal holding companies, apparently. Some of the strong financial interests may be found to have more influence in the field of transportation in this country than one business organization should have."

C. & E. I. 53 Years Old

Officials and employes of the Chicago & Eastern Illinois Railway company will celebrate the fifty-third anniversary of the railroad on August 28, 1930, by formally making a bid for the title of "The Best 1,000 Mile Railroad in the World."

The C. & E. I. was formed in 1877 by a consolidation of the Chicago & Nashville Railroad and the State Line & Covington Co. Instrumental in effecting the consolidation were three prominent Chicago capitalists of that day whose names have gone down in history as leaders in the development of Chicago and the Middle West, Potter Palmer, Lyman J. Gage, and Joseph F. Armour.

At the time of incorporation, fifty-three years ago, the C. & E. I. owned 28 locomotives, six passenger coaches, one business car, 12 cabooses, 1,080 freight cars and 85 work cars. At this time the road has 334 locomotives of all classes, of which 276 are road engines for train service and the others switch engines for yard and industrial switching. The road now has a total of 15,663 cars of which 284 are passenger cars and 14,818 freight cars. Company service cars total 561.

A large part of the C. & E. I. is double tracked, and at the north end, in the vicinity of Chicago, it has three and four main tracks. The entire road is maintained for high speed train operation with automatic train control installed on the main sections. The road operates 44 passenger trains daily, 33 of them through trains.

Canadian Lines to Have Air Transport

Discussions with a view to both Canadian transcontinental railway systems entering into ownership of airway companies have taken place, which discussions have proceeded to a point where agreement in principle has been reached, according to a statement made by President E. W. Beatty of the Canadian Pacific Railway. It is expected that each of the railways will have an equal interest in the proposed addition to their service.

By amendments to its charter secured in 1919, the Canadian Pacific was empowered to establish and operate services of aircraft of all kinds and in recent years it has, through its express department, entered into contracts for express services with established Canadian air service companies.

"I do not believe in that word Fate. It is the refuge of every self-confessed failure.—*Andrew Soutar.*

The Grade Crossing Always Wins

The More Automobiles We Have The Faster The People Will Have to Jump

By U. V. Wilcox

IF THE FIVE simple rules recommended by the committee on protection of railway grade crossings and highway intersections were observed there is little doubt that railroad managers would consider motorists had suddenly become sane.

The report delivered to the National Conference on Street and Highway Safety at its meeting in Washington May 27, under the leadership of Robert P. Lamont, secretary of commerce, asks drivers of automobiles to do only five things:

1. Slow down or stop.
2. Listen, and look in both directions; when one train passes, another may be coming.
3. Shift to lower gear if necessary to prevent stalling on tracks.
4. Don't try to beat a train over the crossing.
5. Be doubly careful at night or on strange roads.

The committee strongly urges the removal of all obstacles to clear the view at crossings and intersections, with clearly discernible and easily understood signs and signals that warn the drivers of approaching vehicles of the presence of the crossing.

The report of the committee is based on a careful survey of the conditions surrounding grade crossings and highway intersections, and the hazard and frequency of accidents. It is urged that new grade crossings be kept to a minimum and existing crossings separated or eliminated as rapidly as possible. In the survey of grade crossings, the committee finds:

1. Accidents at grade crossings are causing 8 per cent of the yearly number of highway deaths, estimated at 31,000. The accidents at railway grade crossings for the last three years have averaged 5,781 a year, of which 4,399 were vehicles struck by trains, 1,272 automobiles ran into the side of trains, and 110 involved the occupants of other vehicles, or pedestrians on crossings.

2. While more than $60,000,000 a year for railway grade crossing elimination has been spent in the last three years, the total number of grade crossings, as well as highway intersections, is increasing, due to new highway construction. Separation of grades cannot be counted upon because of the financial cost to solve the problem. Uniform warning signs and signals and uniform protective measures, and the education of highway users to prudent use of crossings, is the quickest and most certain remedy.

3. Reduction of physical hazards at grade crossings, as well as at intersections, can be facilitated by building practically level and smooth surfaces of road for 25 to 50 feet on each side of the tracks, and the approach to the tracks on grades not exceeding four or five per cent, as well as the widening of the roadway at the crossings. Railway cars should not be left standing at or near crossings, nor other obstacles, including crops, trees, and billboards, so located as to prevent a clear and sufficient view of approaching trains. There is special urging in regard to the adoption of uniform colors easily and plainly discernible for warning signs and signals.

4. Of the 240,000 grade crossings in the United States, 87.8 per cent are dependent for protection on standard fixed signals. The trend is toward visible automatic signals. The cost of signals should be worked out by some fair division between the railroad and the highway owners. Signs should be placed at adequate distances from crossings not to exceed 450 feet to give warning, and other signs calling for reduced speed should be placed nearer the crossings.

5. Careful study of traffic flow and condition must be made to protect the crossings and determine the measures necessary for adequate safety. It is urged that wig-wag red

—International Newsreel

So This is London! Traffic in the Dear Old Strand. Rules of the Road Are Reversed, If You Ask Us.

light, or alternate flashing red light signals be used.

In the sixth, seventh, and eighth divisions of the report it is urged that the fundamental rule against reckless driving be obeyed, and public and school buses and vehicles carrying explosives and inflammables must stop. Police are urged to enforce these laws and also provisions for special examinations of operators and those running large motor vehicles.

In the study of the statistics covering grade crossing accidents from 1926 to 1929 it is discovered that the number of grade crossing accidents and fatalities has remained nearly constant, although there has been a general increase of 20.4 per cent in motor vehicle registrations in the same period, and that about 2,500 persons a year lose their lives at such crossings. It was found that for each fatality in grade crossing accidents, there were 3.65 nonfatal injuries, but for other sources of traffic accidents the ratio is approximately 35 serious personal injuries to each fatality.

In discussing remedial measures in connection with hazards and the risk of accidents the committee says:

"The crossings that are being eliminated are mainly those where the greatest exposure occurs. The same is true of crossings at which protective devices are installed. Hence the aggregate hazard at unprotected crossings is being reduced more than the figures as to crossings eliminated and protected might indicate.

"While the figures are not available as to the total expended by the public authorities as their share in the cost of elimination of grade crossings, it is known to be approximately that spent by the railroads, or more than $30,000,000 a year. The cost of elimination of an average grade crossing is not available, but it ranges from as little as $25,000 to as much as $500,000, or even more."

In considering what constitutes safe driving practices and restrictions at crossings, the committee said:

"Having assured himself that the way is clear, how shall the driver proceed? One rule will hardly fit all cases. If he has not been compelled to stop, and the crossing is level and smooth, high gear will take him clear of danger in the shortest time. If he has come down to low speed, or has stopped he must above all things avoid stalling his engine, which sometimes occurs as a result of a sharp grade, an uneven crossing, or nervousness at seeing an approaching train, and should go over the crossing in low or second gear.

"If he stalls his engine and cannot restart promptly, he should know that, as a last resort, he can generally, by going into low gear and holding his foot continuously on his self-starter, let it drive the car forward off the track.

"Highways over railroad yards, or the switching approaches are special hazards. Drivers must take special cars to see that freight cars do not begin moving suddenly because of a switch engine."

In further discussion of laws and regulations it was urged that police officers do not leave all of it to the railways, and that the state laws be enforced, and the provisions of the Uniform Vehicle Code be adopted. The committee urges a campaign of education to impress the need of proper care on the part of the driving public. In this there should be mention of what is safe and what is unsafe practice.

It was concluded that "it is of fundamental importance that knowledge of the laws, regulations, traffic control measures and proper practices be carried to all of the public. To this end the principles described in this report should be utilized as the basis for educating the general public."

Unusual Rail Case

For the first time in railroad history, citizens of one part of an empire are bringing a suit against the government of another part of the same empire through the courts of a nation foreign to both. This action, taken in behalf of certain British investors, holding preferred and common shares in the Grand Trunk Railway, now part of the government-owned Canadian National Railways, is to secure a claim of $48,000,000. The case is to be tried in American courts after denial in highest British courts. It is hoped to secure proper relief against divisions of the G.T. and other C.N.R. properties extending into the United States.

In 1921 an arbitration board composed of the late William Howard Taft, Sir Thomas White, then minister of finance for Canada, and Judge Cassels of the Exchequer Court of Canada, ruled the stock held by these parties to be worthless. Mr. Taft's minority report estimated the value at $48,000,000, the present claim. During the past nine years the stockholders have made repeated efforts to secure a fiat, or permission to sue the Canadian government, but the latter has taken no action on the application. Now they have employed Congressman James M. Beck of Philadelphia, to act in their behalf in American courts.

Railway construction in South Manchuria is proceeding on the Toanan-Solun Railway and two branch lines, at a total expenditure of 300,000 Mexican dollars (approximately $101,010) monthly. Construction on the Tsitsihar Koshan Railway is almost completed, and an order has been placed for 300,000 tons of rails.

Air Cooled Dining Cars Now

IT WAS A cool reception that Santa Fe System officials and a Harvey crew gave an invited group of business men, a few days ago, in a dining car at the company's station. With the thermometer outside registering about 80, which is as warm as it ever becomes, officially, in Los Angeles, these gentlemen sat down to luncheon in a dining car in which the temperature was just slightly above 69.

To prove there was one thing the government is not regulating, the scientific demonstrators pushed a button and permitted the temperature to rise to 82, and then returned it in 18 minutes to 70. There were no fans, no drafts, no dust, soot, or odors from the kitchen. Cigar smoke disappeared as if by magic.

The diners were happy, well-satisfied men, probably for the first time in their traveling lives, a state of mind due, at least in part, to the fact that for once they had eaten everything they desired in a dining car without worrying about the check. Very largely, however, they were joyful because they had dined in comfort while most of the population—outside of Los Angeles—was burning up in unbearable heat.

Two railroads seem to have solved the troublesome old problem of hot and smelly dining cars. In part they have arranged to have lower temperatures in sleeping cars also, although that is a very much more intricate business because these cars have so little idle space. The Baltimore & Ohio installed air-cooling equipment in its diners earlier in the summer, and with great satisfaction to company and patrons. The Santa Fe has put almost the same equipment into one diner and has twelve more cars on order. The first of the new cars came out to the coast August 4, after a trip across the desert which few passengers are likely to forget. At the Needles, on the California-Arizona state line, the temperature was 104 in the shade of the station, and about 118 everywhere else. Inside the dining car it was 68. This, however, was merely a demonstration, and not the temperature which experts believe proper for travelers in hot weather. Ordinarily 75 or 78 will be maintained to avoid unpleasant possibilities due to sudden changes of temperature from diner to coach—for the air-cooling machinery is not yet applied to other cars.

The Curved Hood Along the Top of the Car Conceals Air Passages Connecting With the Louvres Through Which Cooled Air Enters the Dining Compartment.

A Close-up View of the Hood Shown in the Other Picture.

The Santa Fe and the Baltimore & Ohio are using a system devised by the Carrier Engineering Corporation, known as producers of "Manufactured Weather," with headquarters at 39 Cortlandt street, New York. For the lay mind it is enough to say that this system is somewhat similar to the several automatic refrigerators now so widely used; that is say the Carrier equipment filters and cools the air to any desired degree. Beyond this it is technically much different.

The experienced traveler notices the first change at the car entrance, for the familiar screen door has disappeared. There are two substantial wood and glass doors. Ventilators are closed. The air in the car is chemically or mechanically washed and cooled, and because soot or dirt can not enter the car is immaculate. The air is dry and through mechanical means it is kept that way regardless of moisture outside. There is nothing at all suggestive of ice-box conditions.

Except for the doors and windows and the absence of fans there is no visible structural change in the diner. At one end, in the space familiar to travelers as the cigar locker, the

New Shops of the Illinois Central System at Paducah, Kentucky.

electrical control equipment is kept, out of sight. At the opposite end of the car in a large cabinet reaching from floor to ceiling, but taking no additional space in the aisle, is the machinery or chemical apparatus, a description of which would be useless here even if the visitor understood it. The new and clean air enters the car at the top through what are called louvres which really are vents above what seems to be a moulding. Indeed every part of the device has been cleverly concealed so that it appears as part of the artistic construction of the car itself. The equipment is practically noiseless; that is to say it makes no more "hum" than your patent refrigerator at home, and not nearly so much as some of the types now on the market, some of which make sleepers dream they are on a steamship at sea.

The new cooling process uses about a barrel of water, sufficient for five or six hours, which is about the time between division points or where water is available. A large part of the machinery is attached to the underside of the car, but whatever had to be put on top is in no way disfiguring.

The Pullman sleeper exhibited by James B. Duffy, passenger traffic manager for the Santa Fe, and General Manager Etter, was merely a type of refrigerator not much different from a fruit car. In one end, over the smoking room, a space had been built for ice. This arrangement is not likely to prove very satisfactory, however, in the opinion of men who ought to know, because of excessive cost for ice and labor, not to forget the disturbance created in refilling, especially at night.

Day Coach-Lunch Car

A reclining seat car with the added features of a lunch counter, women's and men's smoking rooms and other innovations, similar to the cars installed recently by the Southern Pacific, has been built by the mechanical engineers and forces of the car department of the Baltimore & Ohio Railroad at its Mount Clare shops, Baltimore. Four of this type of the latest in passenger car styles will take the place of the familiar day coach in the night trains to and from New York and Washington.

The smoking compartments for women are appropriately furnished including comfortable arm-chairs. The men's smoking rooms are at the opposite end. The lunch counter is the most novel introduction. Lunches, coffee and soft drinks will be served. The floor within and around the counter is covered with inlaid rubber, while the aisles are carpeted. In addition to ceiling lights, which can be dimmed, a small individual night light is on the wall at all seats, which can be used at will by the occupant. The advantage of this is that when the ceiling lights are dimmed for those who may want to sleep, the individual light can be kept on by those desiring to read.

Like all other Baltimore & Ohio passenger cars, the new-style "night" coaches are rubber-heeled, that is, shock-absorbing rubber insulation is wedged between the steel, which gives quiet operation and smooth and comfortable movement.

Vicksburg-Delta Point Bridge

Transportation engineers recorded a new achievement in the recent completion of the combined railway and highway bridge across the Mississippi River, from a point three miles south of Vicksburg, Miss., to Delta Point, La., over which trains on the Yazoo and Mississippi division of the Illinois Central will be operated. A 50-year lease has been negotiated with the privilege of renewal at the option of the railway, its heirs and assigns for a period of 999 years thereafter. A definite charge per car has been established in the lease for revenue cars operated across.

Crossing the Mississippi was done heretofore by ferries, from one to four hours being required to take a passenger train or 40-car freight across, while 45 minutes were required to transfer motor vehicles from shore to shore, depending on the river stages and weather. Now the crossing is made in ten minutes for a railway train.

The bridge proper is 2,930 feet long, the river approach piers being 508 feet long on the Mississippi side; on the Louisiana shore a steel trestle approach 4,110 feet long extends between the solid land and the bridge proper, and the remainder of the distance was constructed of earth embankment and cut. Thus, the total length of the project is 15,300 feet. The total cost, including financing, engineering and right-of-way, was $6,450,581. The project was financed by a first mortgage bond issue of $5,000,000, followed by debenture bonds of $2,000,000, both issues having sinking-fund provisions sufficient to retire all bonds on or before maturity.

Canada-African Line

The increased inter-trade relations between British dominions has created such a demand for faster transatlantic service that a fleet of new ships is to be put into service between Canada and East African ports. Direct sailings between Montreal and Mombasa and other ports of call in B.E.A. via the Suez Canal are to begin in September with the departure of the David Livingstone, one of eight motor vessels launched this year for Elder Dempter & Co.

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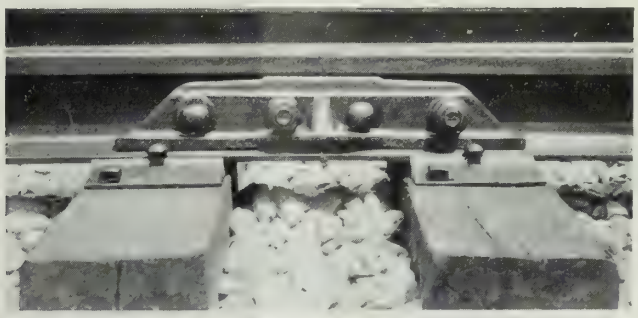

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P. E. Crowley,
President, New York Central Lines.

SOME WISE man said, quite a long time ago, that too few executives, and others in charge of men in a supervisory capacity, have the remotest idea of the overwhelming value of the fine art of showing appreciation. "Encourage those around you to believe in themselves," said this philosopher. "Kind words very often are more welcome than gifts of money; and they cost nothing. They leave a pleasant memory. They stimulate to good will and to noble endeavor."

Sometimes it may seem to be costly education, but nevertheless it is literally true that a disaster may prove to be the turning point in a man's career, stir him to new wakefulness, and make of him a most trustworthy and loyal employe. The first bad break may, under the rules, be complete justification for immediate discharge, but another chance is in many cases a fine investment.

We are thinking of P. E. Crowley, president of the New York Central Lines, when we set down these words of wisdom. There are few like him. James E. Gorman of the Rock Island comes within the classification; J. H. O'Neill, general manager at Seattle for the Great Northern; all Irish stock, all real students of men, all much beloved by those who take their orders. There aren't many. When one of these executives discharges a man or declines to put him back after some lesser official has let him out he stays discharged, and he gets precisely what he deserves. There's a lot of satisfaction in knowing you have had a square deal.

A story is told of Mr. Crowley that illustrates the text for this preachment. He was assistant general manager at Albany when an engineer on the River division failed to answer the call one night to take out his train. On a railroad this offense is equal to calling the Czar a poor boob in the old days of the monarchy. It comes just a shade under crimes punishable by death. So the trainmaster laid him off before he could say a word. Any trainmaster would have done the same thing.

The case went up through the customary channels to the assistant general manager. "I thought there must certainly be something back of it," said Mr. Crowley, long afterward, "when an engineer who didn't drink failed to take out his train. So I sent for the man. It didn't take long to learn what had caused the trouble. His baby had the croup that night, and he and his wife were almost distracted. Then I sent for the trainmaster.

"'Jim,' I said, 'did you ever have a baby sick with the croup?'

"'Why, no, Mr. Crowley,' he answered.

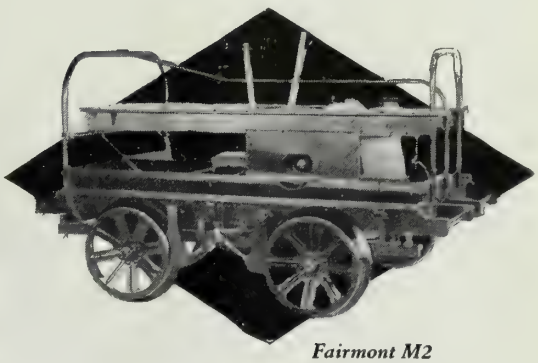
"'Well,' I told him, 'if you had there would be a few minutes, maybe, when you wouldn't know or care whether the railroad was running or not.'

"Of course he saw the point. Any man would. Discipline is a grand thing, but it has to be operated humanly."

There was a head-on collision one night while Crowley was superintendent of the Pennsylvania division at Corning. Beyond a doubt, and such things are easily determined on a railroad, the two crews were at fault. They had to be discharged. After a while Superintendent Crowley began to study the men's records.

VISION

"This is my second great step for my country," said Charles Carroll, signer of the Declaration of Independence, when he turned the spade of earth for the first railroad to the west, on July 4 1828. Time has justified his forecast....When one considers how closely Prosperity has followed the tracks of the railroad, there is nothing but admiration for the Men of Vision directing their destinies.



Fairmont M2

Standard Section Car seats 10 men; top raises for adjustments; 6 H. P. engine Endless Cord Belt Drive.

Progress, whether measured in railroad systems or railway motor cars, depends upon foreseeing the needs of each dawning day. VISION made possible the brilliant expansion program of the railroads; and, in the sphere of motor cars, played the part that led to Fairmont supremacy.

Needs, as they developed, have always been anticipated by Fairmont. A survey of all worthy improvements, such as ball and roller bearing engines, show that the great majority were engineered and pioneered by Fairmont, in the striving toward ***"Lowest Over-All Cost Service."*** This goal has been attained—proved by the fact that ***over half the motor cars now in use are Fairmont products!***

FAIRMONT RAILWAY MOTORS, INC.

FAIRMONT, MINNESOTA, U. S. A.

General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO

District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans

FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles, and safety appliances

Fairmont Mudge Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT

When this had been finished the crews were reinstated. They were good men, Crowley said, too good to lose. "It was their first bad break. They had been storing up good behavior records for years. It seemed to me they had a drawing account with the company, with a balance in their favor. I felt so strongly about it that I would have quit myself if my view had not prevailed. But it did. I mention these things only to show that you must know your men and be fair with them, even in some pretty severe situations. It's character that counts with me, even more than ability."

PASSING over for the moment some of the man's lovable qualities and the fine record he has made to put himself at the head of one of the nation's great railroad systems, we draw out the trusty old rubber stamp in telling of Pat Crowley's beginnings. He was born at Cattaraugus, N. Y., August 25, 1864, the son of Dennis and Helen Crowley, had only a common school education, and started his earning career as a messenger for the Erie Railroad when he was 14 years old. His salary, wages, or stipdendiary emolument, whatever it may be called and stay within the postal regulations, was five dollars a month. We hope that the Erie official who fixed that rate is getting what he deserves wherever he may be.

And this is where the rubber stamp is lugged out: He studied telegraphy whenever he was not rushing madly about town with messages, and eventually became an operator at Custer City, Pa. There were only two trains a day at that town, and Pat got tired looking at them. Casting about for a better job, as any ambitious boy of Irish ancestry would do, he decided to be a dispatcher. Others have made the same laudable decision and then wondered over the years that elapsed before the goal was reached. It isn't done quickly. As we held the job ourselves in the long ago, we feel free to say that dispatching calls for exceptionally well-balanced brain power, a meekness of spirit under violent abuse from train crews, and a rather fine understanding of men and machinery.

This last-named quality is mentioned here because of the authenticated fact that some crews, after leaving a terminal live, apparently, in the belief that they are on vacation, and have no higher object in life than the stealing of time here and there as the day goes by. Locomotives that are marvels of mechanical efficiency in the enginehouse begin to froth ten miles out of town, blow out cylinder heads, drop off side rods, and display other distressing weaknesses which result, finally, in their coming into the end of the division little better than junk —all to the despair and anguish of the dispatcher then on duty. A marvelous school is dispatching for the studying of human nature, or what passes for that. It had its influence, too, in forming the character of Pat Crowley, for he achieved the heights in the goodness of the powers that were, and was sent to Buffalo, Farthest West for many a New Yorker.

At Buffalo young Crowley discovered that the dispatchers were all gray-heads, getting along in life, but not getting anywhere else. "I didn't think I'd care to be a dispatcher when I'd be that old," he decided, one day. He was forever deciding things, you'll notice, but always after careful observation. So when an offer came to him from another road, the Rome, Watertown & Ogdensburg, to be chief dispatcher he just up and quit, and took the new job. Mr. Crowley tells about that promotion casually, as if being chief dispatcher was some ordinary job when he knows very well, as does every other man who has held the exalted post, that it made him swell up until keeping buttons on his clothes was a problem.

IT WASN'T very long until the chief became trainmaster. This had no bad effect, although personally we never did know a trainmaster to agree with anyone about anything; and Crowley moved along, up the line, better jobs, more responsibility, until at 37 he was superintendent of the Pennsylvania division. Since those days he has had about all the jobs available on the New York Central or the lines it has absorbed in the passing years. He was assistant general superintendent at Syracuse when, in 1912, he was called in to the Forty-second Street terminal as general manager under the late A. H. Smith, then vice president. Smith, like Crowley, was what is called a "cinder railroader," meaning he had come up from the ranks.

Mr. Smith, as we all remember, was taken unexpectedly as the result of an accident, and finally, in 1924, Mr. Crowley became president, the most astonished man in the country. "You could have knocked me over with a feather," he declared, drawing on the cannery for the old phrase, "and here I've been ever since."

Mr. Crowley stands 5 feet 8 inches, a bit spare, suggesting the athletic type; blue-gray eyes under overhanging brows that don't mean a thing if you are timid, has a real Irish smile, and a keen wit. While all this indicates a very pleasant personality we don't believe for a moment that anyone would be successful in handing him any hokum. No man of his experience in the last fifty years is likely to be fooled easily or misled in his judgments of men. He knows his road thoroughly, has a very wide acquaintanceship among employes, although the familiar story about his knowing them all by their first name is a bit thick. The men like him, as railroaders are given to liking an executive who knows the ropes. They like him because he shows that he understands their troubles when they have any; he has had them himself. They like him because he appreciates good work, and doesn't think it a loss of dignity to say so—which brings us back to what we said in the beginning of this little biography. Turn back to it and read it again. You may recognize one of your own good points—or a bad one.

Mr. Crowley belongs to a number of clubs, attends many functions if they interest him, believes in perfecting in every possible way the best of public relations, and exerts himself constantly in efforts to overcome costly competition affecting the passenger service of his lines.

He plays a bit of golf, but we decline to be taken in by the story about the old army game he plays, "out in '61 and back in '65." It isn't being done. Not even by the Joneses. He likes to read good books. He has a charming family and a beautiful home at Mount Vernon. He is, indeed, a wonderful railroad man, up from the ranks, a "cinder railroader."

Necessity Teaches Self-Reliance

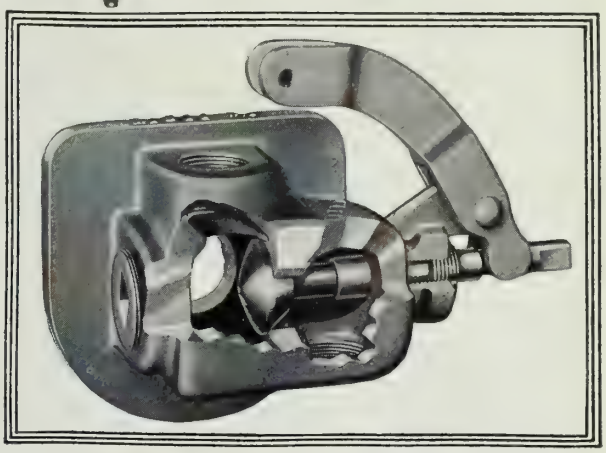
BOYS WHO are obliged to shift for themselves or take on at the same time grave responsibilities because of the father's untimely death, learn lessons in self-reliance scarcely imagined by boys safely sheltered in school and home with both parents watching out for their comfort. Throughout the writing of these brief biographies the stories of many of these boys, now men in business, have crossed the desk to the printer. They are always interesting, always filled with struggle, hope, energy, unselfishness, determination.

Charles Eugene Johnston, now president of the Kansas City Southern Ry., was fatherless at seven years, but luckily he did get a chance

A Typical B-A Sludge Remover Installation (Type B), showing also the Banjo Muffler.

B-A Sludge Remover

MULTIPLIES *the Effect of* BLOW-OFF COCKS



B-A Blow-Off Cock (Type N. C.) Used where clearances are limited. Supplied with Type B Sludge Remover.

The usual blow-off cock installation cleans out sludge within a short radius only.

The B-A Sludge Remover multiplies this action many times. Trouble-making, precipitated solids are cleaned out at numerous points simultaneously.

Perforated pipes are installed along the bottom of the boiler and water legs, and are connected to two B-A blow-off cocks hooked up in tandem to insure the simultaneous operation of the valves.

The discharge of the two valves is piped together and escapes through a Banjo Muffler which separates the steam and water, blowing the steam out directly and dropping the water to the track without force.

Over 2500 Sludge Removers in service is ample evidence that they are ridding boilers of precipitated solids. Descriptive booklet on request.

The manufacture, supply and service of boiler water treatment chemicals is the primary business of The Bird-Archer Company. These activities and expert services, properly include the installation and service of mechanical devices, likewise designed to promote locomotive boiler efficiency.

THE BIRD-ARCHER COMPANY

NEW YORK · CHICAGO · ST. LOUIS

The Bird-Archer Company, Limited, Montreal

for schooling. He was born at St. Elmo, Ill., October 30, 1881, and started like other boys, or perhaps a little more enthusiastically than some, in the quest of education. Some boys growl about getting up in the morning in time to rush to school, with nothing to do except what they can't avoid, hoping to reach home again in time for a meal. Young Johnston, studying his way through the public school grades of St. Elmo, had to help support the family. In doing his part he contributed $15 a month, his pay as night call-boy for the Chicago, Paducah & Memphis, a part of the Chicago & Eastern Illinois, when he was 16 years old.

THE real beginning of Johnston's career was on a day in 1897 when he and some other boys were playing on the station platform, and a tall, thin man came along. It was B. F. Johnston, a railroad contractor, said to be a personage in those parts. The Kansas City, star, describing the incident, says that after B. F. J. had passed the boys he turned, suddenly, and said in a smiling way he had,

"Charley, I want to speak to you a minute. How would you like to go out with an engineering party? We could pay you $25 a month."

"I'd like it," said Charley.

"All right. Talk to your mother and let me know tomorrow."

His mother said he could go, and in a few days he had reported to P. L. Wise, the engineer in charge of the party in Southern Illinois that was making a location of a line from Marion to Thebes. The scene was changed from a small town to rocky wooded hills.

"We will start you out as flagman," said Wise after work was under way the first morning.

One evening after a week he stood near his boss on the top of a hill. Through the woods that rolled down in front of them to the creek a mile away a narrow path had been hacked out of the trees and underbrush. Wise was talking to someone. "In that first dip there will be a culvert; we take off the side of the next hill for an easy grade down the creek; and there will be the bridge that we were talking about."

Suddenly to the 16-year-old boy the path became a right-of-way. He saw great bridges built, grades cut away, steel rails laid on a solid roadbed, and passenger trains roaring through the woods. He wanted to build things. Maybe that wouldn't make him a railroad president, but, coupled with his natural turn for mathematics and his native ability for managing men, it developed the engineer who was to be ready for his turning point in 1906.

Nine years passed. By that time the handicaps that confront most engineers were dragging down the momentum of his fast start. His boss on the Frisco, where he was employed at $100 a month, formerly had been on another railroad. Outsiders seemed to be getting the good jobs.

Charles E. Johnston
President, Kansas City Southern.

About that time the talk went around that the Kansas City Southern needed men. Charles E. Johnston found A. F. Rust, chief engineer of the Kansas City Southern, in the office at Ninth and Broadway, says the Star.

"I heard that you were using civil engineers. I have a job now, but I would rather come here," said Johnston.

Rust had looked up from some blue prints. "Do you know anything about location work?" he said casually to the future head of the road.

"Yes, sir. I am a locating engineer."

"We can give you work for three months, no longer. Our survey will be completed by that time and we will be letting off older men than you are."

"All right," said Johnston. Right then he began his three months' job which so far has lasted twenty-three years.

At the end of the three months his work had been completed and he was on another job. H. G. Burt had recommended to L. F. Loree, chairman of the board and also president of the Delaware & Hudson, that certain survey work should go on. One of the eleven engineers was to be retained, the rest dismissed. That *one* was Charles E. Johnston. He was then 25 years old.

When he was 27 he was made division engineer; at 29, chief engineer of the road in charge of improvements and maintenance of way. At 35 he was general manager of the road; at 42, vice president, and at 46 he became president.

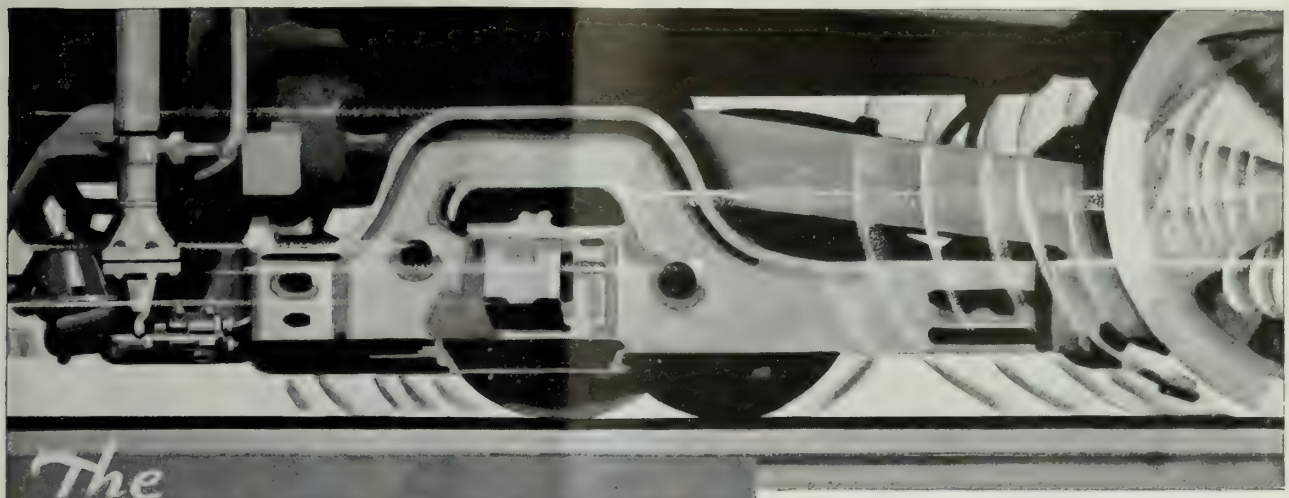
The Costly Termite

SPEAKING before the National Electric Light Assn., overhead systems committee, southwestern division at Dallas, recently, R. E. Meyers, in charge of the department of chemistry and tests, International Creosoting & Construction Co., of Galveston, drew attention to the increasingly serious depredations of termites or white ants. A recent government report announced that termites have now been found in all but three states of the union, namely North Dakota, South Dakota, and Vermont. So prevalent are these attacks, Mr. Meyers said, that it was safe to make the rather broad assertion that within half a day after hearing a statement of this kind, any group interested in timber treatment can be shown white ant attacks in untreated wood in active service. This of course excludes the three states named.

It seems that with the thinning out of the forest areas, which are the natural habitat of the termite, they have sought other shelter and as a result dwellings and untreated pole lines are attacked. Termites work rapidly and dangerously; often there is no outside indication of their presence. In some severe cases, at Beaumont, Texas, for example, untreated poles collapsed in three years from this cause. Not only are the lines damaged, but the poles act as direct highways by which an infestation can spread from one section to another.

Government tests have shown that creosoting of wood protects it for at least 20 years from termite attacks. An N.E.L.A. report states that "So far as known, termites have not attacked a creosoted pole by eating their way through creosote."

The National Committee on Wood Utilization, in a recent bulletin, said wood preservation insures longer life to wood used in construction; it makes one tree serve the purpose of two or more trees because of the additional service rendered; and a tree saved is a tree grown. The users of treated material, or those who practice wood preservation, are unconsciously aiding in making forestry



The LOCOMOTIVE BOOSTER MOVES GREATER TONNAGE AT LOWER FUEL COST

UNLESS a locomotive has a Booster it must be built heavier and given more tractive power to start the load it can haul at speed.

Once underway such a locomotive carries excess weight. It is not loaded to capacity. It has a pair of drivers which could be dispensed with as far as hauling ability is concerned.

Contrast this with a Booster-equipped engine loaded according to capacity at speed. The Booster is cut-in only when needed. It uses idle steam for starting, accelerating and to maintain speed on grades.

Greater tonnage is hauled, resulting in lower ton-mile fuel costs.

The Locomotive Booster

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK ST. LOUIS CHICAGO MONTREAL SAN FRANCISCO

Freight House of the American Hawaiian Steamship Company at Los Angeles.

pay. The consumers of treated wood are perhaps doing more to cut down useless waste in wood than any other single group of consumers of forest products. There are in our forests today many woods suitable for construction, but not resistant to decay without preservation treatment; and if used for many purposes without treatment they would render little service. Naturally, the drain on such woods as possess natural decay resisting properties has been and will be heavy. Wood preservation is wholly adaptable to these less durable species, and in most instances renders them fit for exceptional service.

Railway ties offer the best example of the economies which are a result of the use of preserved wood.

In 1907 the total number of crossties purchased was 153,699,620, of which perhaps only a small percentage was treated. In 1927, 103,438,354 ties were purchased, of which 72 per cent were treated. This reduction of some 50,000,000 ties was due very largely to the preservative treatment which resulted in an increased life and service of the unit tie. A striking example of the timberland saved by this development is shown in the reduction of acreage by an amount sufficient to produce those 50,000,000 cross ties. Suppose, for example, that one acre of average timber will cut 60 crossties (much timberland will cut less than this amount). In 1907 on this basis, 25,616,603 acres would have been required to produce the amount of timber indicated for that year.

In 1927, 17,239,726 acres were cut, or some 8,276,877 less acreage than was required in 1907. When it is considered that this reduction represents an actual saving of 33.5 per cent of forest land, the economic saving in the use of preserved wood is apparent.

Since treated ties generally last from two to three times longer than untreated ties, it is easily seen that the adoption of treated wood has materially decreased the drain on our forests.

The Live Stock Producers' Share

Producers of live stock received 94.3 cents out of every dollar paid by purchasers of their products in 1929 after freight and other distribution costs had been paid, according to a study by the Bureau of Railway Economics pertaining to prices of live stock and their relationship to transportation costs and summarized in a bulletin issued July 16.

The study covers a six-year period from 1924 to 1929, inclusive, of live stock shipments to and prices paid at ten important markets, Chicago, East St. Louis, Ill., Baltimore, Fort Worth, South Omaha, and South St. Paul. The bulletin says:

"Freight charges and other distribution costs are relatively a small proportion of the price paid by the purchaser for live stock at terminal markets. The proportion absorbed by these marketing costs has decreased materially during the six years 1924 to 1929.

"For every dollar spent by the purchaser in 1924 for live stock, 5.6 cents was paid for freight and 3 cents for other costs of distribution, such as feed and bedding, yardage, commissions, etc., leaving a balance of 91.4 cents which was returned to the producer at shipping point. The amount paid for freight in 1929 was 3.7 cents, and for other costs of distribution 2 cents, while the amount returned to producer was 94.3 cents. Thus, during a period of six years the proportion absorbed by marketing costs, including the cost of transportation, has declined about 33 per cent."

The complete study containing much valuable information may be obtained from the bureau at Washington.

Some Railroader

How many railroaders do you know who, if tendered $18,000 by a United States district judge, would refuse the tender? Well, strange as it may appear, there's one such man in the ranks. He is George A. Gaston, vice president of the Central Vermont division of the Canadian National Railways.

The old Central Vermont became bankrupt and went into the hands of receivers in December, 1927. Mr. Gaston and J. W. Redmond were named receivers. They were discharged from duty after two and a half years' service. So highly pleased was the court, with the reconditioning and rebuilding program of the receivers that in accepting the accounts, Judge Howe discharged the receivers with thanks, adding that he awarded each the sum of $18,000 additional compensation for "vigorous, diligent, successful and valuable service." Mr. Gaston thanked the court, but refused the allowance, saying the Canadian National had paid his salary.

New Regina Freight Line

One of the most important railway improvement projects of the year was announced jointly recently by the Canadian National Railways and the municipal authorities of Regina, Sask. When certain legal details have been disposed of, C.N.R. engineers will start construction of a freight line to circle the northeast section of the city, which will enable the line to route freight around instead of through the city.

A score or more properties are to be exchanged between the city and the railway company, streets are to be closed along the freight line, and the street railway line rerouted with a subway under the railway at Winnipeg street, at the expense of the electric line. The program involves expenditures in excess of $500,000. It will give Regina one of the most modern freight terminals in the West.

NOW A DAY coach seat that rotates as well as reclines

HERE is a chair that will help you increase day coach travel. This luxurious seat, the 162-PSS, not only reclines to four restful positions, but *rotates* as well — and on a small, space saving radius. It enables passengers to sit in groups, to face the windows and fully enjoy the scenic advantages of your route. It will bring to your day coaches more luxury and comfort per dollar of investment than any other style built today The trim, practical design of the 162-PSS allows the arm rest to be placed flush against the side wall — actual cushion space is increased approximately two inches over present types of day coach seats. If you are contemplating the purchase of new or replacement seating for day coaches, it will prove well worth your while to investigate the new 162-PSS. Any of the offices listed below will be pleased to furnish you with complete information on the new 162-PSS or other types of Heywood-Wakefield railroad seating.

H-W rotating and reclining chair 162-PSS in C. B. & Q. R. R. day coach.

HEYWOOD-WAKEFIELD

Boston, Massachusetts

516 West 34th St., New York City
J. R. Hayward, Liberty Trust Bldg., Roanoke, Va.
H. G. Cook, Hobart Bldg., San Francisco, Calif.
311 Railway Exchange Bldg., Chicago, Ill.
A. W. Arlin, Delta Bldg., Los Angeles, Calif.
The G. F. Cotter Supply Co., Houston, Texas

The Railway and Power Engineering Corporation
133 Eastern Ave., Toronto; Montreal; Winnipeg, Canada

It Makes Rail Joints Stay Tight

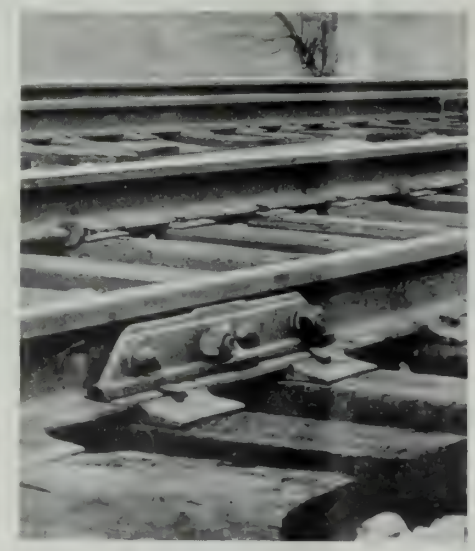
THIS IS such a noisy world, and there are so many rough spots in it to irritate the jangling nerves of men and women, that a man or company doing anything to lessen the trials of every day existence certainly is entitled to public thanks. Never, so far as the well-known oldest inhabitant has learned, has there been a time when the world needed quite so much the best ministrations of mechanical science to soften the jars and jolts of this thing called Civilization. And science is coming to the rescue daily.

It is safe to say that travelers know more even than city and town dwellers about the wear and tear of modern living. Stay-at-homes complain, very properly, about radios, barking dogs, the family on the floor above, the chatter and racket of a race gone batty over miniature golf. Passengers in air transports dislike the roar of motors and propellers; automobiles and highway buses try the patience of riders. But railway passengers who have bumped, clickety-clack, bumpety-bump, over low rail joints, a motion that starts on the track below and ends at the top of the spine—these know a misery beyond words.

Ostensibly, at least, the railroad managers worry over these nerve-wrecking conditions to which the public has had to submit, but actually they are equally, or perhaps more concerned over the results as shown in the condition of rolling stock. The public, which isn't very scientific about such things, will be happy to know, nevertheless, that something has been done about it, and without any new laws or orders from the government at Washington. The Muller Evertite Rail Joint has arrived. Indeed it came in quite a while ago, but men who make this sort of thing don't, as a rule, say much about it until it has had pretty thorough trial under the most exacting conditions. And at this point we must give attention to what the technical gentlemen say about it. It is enough for you to know that the Evertite Rail Joint means smoother riding for you, and for the railroad users a very important effect in maintenance of track.

One of America's outstanding railway engineers says, "About 40 per cent of all track labor is required to keep the track in line and surface. Most of the defects in surface, and in line as well, have their origin at the joints. It is apparent, therefore, that a rail joint which holds up the rail ends will save a large amount of labor in surfacing."

It is a recognized fact that rail joints are the weak lines in the chain; while much has been done to improve this condition, it is still quite evident that rail joint principles and improvements have not kept pace with the ever-increasing size of rails and rolling equipment. The Evertite Rail Joint has been so constructed along sound engineering principles as to represent the well known mechanical law of the three point contact. The center of the joint is solid in pillow-block formation adhering to the contour of the underhead also the web of the rail and engaging the rail base. The rib and body sections of these bars diminish in height and thickness, the outer ends diminish in thickness which provides spring tension both laterally and vertically, resulting in flexibility at the joint under live load conditions. This spring tension contained in the joint eliminates independent rail movement allowing the combined joint bars and rails to flex in unison under variable loads throughout its length, representing one continuous line of steel track. While these joint bars appear to be smaller compared with other bars they are doubly strong, being made of high carbon steel drop forged heat treated and oil quenched. This process makes the joint bars two to two and one-half times as strong as the ordinary hot rolled steel bars. Joint bars produced in this manner are 10 per cent harder than the ball of the rail, ranging from 250 to 300 Brinell hardness. Tempering of the bars shows clearly that they are alive and can spring with the rails without losing their grip or becoming "dead" and worn. The center of the bar constitutes a solid metal section in pillow-block formation which securely engages both rail ends preventing any lateral or vertical movement of the rail which are the chief causes of joint and rail wear resulting also in many other evils. The Evertite rail joint supports the rails exactly where the blow is struck from the wheel action.



The Muller Evertite Rail Joint.

The design of these joint bars easily permits the raising of the low joints keeping them level and up to line, and this minimizes joint tie-tamping.

Low joints are driven down into the tie and roadbed by the impact of wheels dropping into these low pockets, first on one side of the car, alternating to the other, producing a weaving action of the train. This action requires extensive joint and joint-tie maintenance to hold the track to line and gauge. As joints become loose the shock impact increases, allowing the joint to move freely causing the rails to batter and chip excessively, thereby diminishing their life. Rails worn due to this condition are usually removed, cropped, redrilled and again placed in service.

The Evertite Rail Joint has been used by the Baltimore & Ohio Rail-

JOHNS-MANVILLE-PIONEERS OF REFRIGERATOR CAR INSULATION

The cars shown above are part of 650 refrigerator cars made by American Car & Foundry Company for a western railroad on which J-M Insulation has been applied.

J-M Insulation can be applied in a continuous blanket eliminating the possibility of air or heat leakage caused by joints. Also, it can be compressed over framing posts or under belt rails.

This photograph illustrates an important construction advantage of J-M Insulation. In cutting this material, the edges do not thin out or cause trouble in handling.

J-M INSULATION...

The economical, permanent Insulant for Refrigerator Cars

IN bringing more revenue to the railroad the refrigerator car has also brought more problems. One of these—the problem of insulation—Johns-Manville has thoroughly cleared up for you.

The costly deficiencies that railroads have experienced with insulation—rot, deterioration, short life, are all eliminated by J-M Insulation. All the qualities that experience has shown to be necessary for the safe transport of perishable foodstuffs are provided by J-M Insulation.

Moisture, the great destroyer of other insulations, will not affect J-M Insulation—even if it is completely submerged in water. Neither is J-M Insulation affected by car vibration. It will not collapse or pack down. J-M Insulation installed in refrigerator cars 24 years ago was recently tested and found in no way impaired.

J-M Insulation, light in weight, can be economically applied to any type of refrigerator car. Adaptable to old cars as well as new, it is easily handled and rapidly applied. Wherever Insulation can be applied to minimize refrigerator car costs our engineers are ready to help you. The facts about J-M Insulation—its low thermal conductivity and construction details can be had by mailing the coupon below.

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road since May, 1928, when it was installed west of Washington.

The joints were applied to old rail where the joints were badly chipped and battered. After 18 months' service, the rail ends and joints are in better condition than when they were applied, and in that long period of service, it has not been necessary to tighten bolts.

The Evertite Rail Joint is being manufactured and sold by Standard Equipments Inc., a new railroad supply company organized by New York and Canadian interests with main offices in New York and a branch office in Montreal. The officers are, C. O. Bradshaw, president; R. F. Greenwood, vice president and engineer; J. E. Ingram, Jr., vice president; J. H. Rogers, secretary and treasurer.

This Road for $2.80

A little railroad that runs from Mars to Jupiter, with brief stops at Venus and Juno, Fla., has been bought by C. P. Corrigan, a retired conductor, for $2.80. The transfer is said to have been a cash transaction. The road is a narrow gauge, about eight miles long, most of it within the city limits of Palm Beach.

The line operated in the '80s with a single engine and several flat cars. Passengers sat on orange crates on the flat cars. The line died of natural causes when Miami gained its first resort boom in 1889 and voted the county seat away from the village of Juno.

In One Hour

In an hour, says the Bureau of Railway Economics, the railways of the United States earn $716,840 from their transportation operations.

In an hour, the railways spend $514,386 in operating expenses.

In an hour, the railways pay $330,612 in wages (Much of this total is included in operating expenses.)

In an hour, the railways pay $45,288 in taxes to national, state and local governments.

In an hour, 6,026 cars are loaded with revenue freight on the railway's lines.

In an hour, 88,932 passengers board the railway's trains.

(Based on statistics of 1929 operations. Figures represent averages.)

Here's A Queer Story

The Northern Pacific, in trying to solve a mechanical engineering problem, has called upon the Orient and is applying the genius and skill of a Chinese mechanical engineer, says M. A. Daly, general fuel supervisor of that railroad. The Chinese, who is engaged in this scientific work, is C. P. Pei, 29 years old, a native of Soo Chow.

Mr. Daly says that when the railroad company began to look for a man qualified in the particular specific work his department required, his attention was called to Mr. Pei, then engaged in railroad engineering work in the East. On high recommenda-

C. P. Pei.

tion of eastern engineering educational authorities, Mr. Pei was engaged for the work. In view of the heavy demands which the Orient makes upon the American engineering profession for experts to solve problems in China and Japan, the procedure in employing a Chinese on an American railroad in this capacity is unusual.

Mr. Pei was graduated in 1921 from the government college in Tang Shan, where he had studied engineering. Subsequently, he entered the railway engineering department of the University of Illinois. His intention, on coming to America, was to obtain within a few years an experience which he could take back to China and utilize in the engineering field there. But, because he showed unusual talent in research work, he found his services in demand in America.

Believe It or Not

This story comes from the crew of No. 144, a through Southern Pacific freight train between Houston and Shreveport. A pigeon, the men say, meets the train every day at a water tank just outside of Nacogdoches, La. Perching itself on the running board of the locomotive, it rides as far as Maytown, 15 miles away, and then flies off. Apparently feeding in Maytown during the day, the bird returns to the Maytown station in the afternoon and boards the freight train on its return trip to Nacogdoches.

Is This the Record Long Run?

What is said to be a world's record has just been established by Canadian Pacific passenger engine 2808, of the H 1 class, a few of which have been placed in service recently. The engine left Ft. William June 19, with the transcontinental train, the "Dominion," for Calgary arriving there June 21, and left Calgary June 22 for Fort William, a continuous run of 1252 miles, made with the idea of obtaining statistics on economic operation with a maximum of safety and efficiency.

"This is a world record for a straightaway run for a passenger locomotive and is receiving world wide attention among transportation and engineering interests," said W. M. Neal, general manager of Canadian Pacific Western Lines.

Time to Re-tire

Pierre J. Barron of Buffalo, was employed by the contractor who built the Lackawanna Railroad into Buffalo in 1881. He became a locomotive fireman in 1882, graduated to an engineer in 1884, and has been busily engaged ever since then in operating locomotives pulling heavy trains back and forth between Elmira and Buffalo. Now Pierre has been relieved from active duty and his name added to the honor roll of the railroad.

Engineer Barron's record discloses a continuous employment of 48 years and three months. Assuming that he averaged only 100 miles daily during the 579 months of his service in engine cabs, (his average undoubtedly was much higher than that) he is a much-traveled man with 1,737,000 miles to his credit, about 70 times around the world, all in the Empire State and all on one railroad.

"'Love thy neighbor as thyself' is a hard doctrine for the average Christian to digest." — *David Lloyd George.*

"Don't be afraid of this world's changes; the danger is that it won't change enough."—*S. Parkes Cadman.*

"Few men are lacking in capacity, but they fail because they are lacking in application."—*Calvin Coolidge.*

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IMPROVED HIPOWER

Continuous Rail Crossing Tested

THE TESTING of W. H. Whalen's continuous rail crossing, described in this magazine in May, 1929, was witnessed August 7, at the junction of the Union Pacific and the Southern Pacific tracks at South Gate, near Los Angeles. State and city officials, railroad officers, and many of the newly formed company's stockholders were present for the demonstration.

Aside from its technical features, the most interesting thing about the invention is the absence of noise, the long-familiar clickety-click, when trains cross over the device. So far as the public is concerned this is enough to make the continuous rail popular, but railroad men, interested of course in eliminating noise, are chiefly concerned with the belief that Mr. Whalen's crossing will save rolling stock from all the jars and pounding now so costly in maintenance. Street car companies, also, display interest in the device for this reason, and this, as a consequence, brings municipal authorities into the picture in the endless, and thus far profitless efforts to reduce noises at intersections.

Mr. Whalen's invention, avoiding technical details, consists of four small turn-tables placed in the intersections of rails. When these tables are turned for an approaching train, manually or electrically, a continuous rail is created, eliminating the jump of two or three inches which now causes the noise and the shock to equipment and to passengers. The casting, involving all four rails of the crossing, is massive and heavy. In a chamber below each turn-table is an electrical contrivance by means of which, it is declared, the tables may be heated to avoid freezing where that danger is encountered.

Mr. Whalen formerly, for many years, was superintendent of the Southern Pacific's Los Angeles Division. Among those who witnessed the demonstration at South Gate were Governor Young, Mayor Porter of Los Angeles; Harry Thomas, president of the City Planning Commission; H. R. Brashear, traffic manager of the Los Angeles Chamber of Commerce; Arthur Adams, director of public service at Long Beach, and other prominent persons.

Foreign Railway News

Unsettled status of negotiations regarding Chinese Eastern Railway and curtailed purchases of the railway are still affecting the Harbin district. The railway is calling for tenders for full requirements, but is making only urgent purchases. An early agreement at the Moscow conference is expected to relieve the situation. Profits and traffic of the South Manchurian and Chinese Eastern Railways have fallen off about 10 per cent. Trans-Siberian passenger haul has been heavy, averaging 300 passengers each way weekly.

The volume of purchases of railway supplies by the Peiping-Lioaning Railway (Peking-Mukden) continues. Tenders have been invited for considerable supplies of locomotive parts and some new locomotive purchases are being considered. The Peiping-Liaoning Railway continues normal operation under control of the Mukden authorities. Purchases by other lines are quiet or dormant. The Peiping-Hankow and Tientsin Pukow lines are still hampered by the war situation. There is no improvement in the unfavorable conditions which have existed for years on the Peiping Suiyan line, under control of the Shansi military authorities, but limited service continues over its entire length. Commercial traffic over the line, however, is very low because of tax barriers.

The Four Little Turntables, Making the Continuous Rail are Discernable.

A proposal to make the Shanghai-Nanking, and the Shanghai-Hangchow-Ningpo, the model railroads of the country was tendered to the ministry of railways by Liu Wei-tse, managing director of the two lines, recently. The scheme provides, among other things, for rebuilding of the stations at Nanking and Shanghai, modernizing platforms of stations, improvement of third and fourth class coaches, and purchases of additional locomotives and cars.

The Chekiang provincial government is now perfecting plans for a new railway line from Hangchow to Kiangsi. An office was established in June, 1923, to take preliminary measures for the work. The proposed line will measure 317 miles, has been completely surveyed, and construction work is to start in the immediate future. The construction will be carried on by sections, the first section to be completed within this year. According to the carefully prepared and detailed budget by the department of reconstruction, the line will cost Mex. $18,837,000 (one Chinese Mexican dollar equals $0.3367) minus all administrative and incidental expenses. It is understood that orders for construction materials will be placed with American and British companies.

The successful use of alcohol as a fuel in railway motor cars is reported by the Brazilian railway on the line between Rio and Sao Paulo. The fuel used, consists of 43° alcohol with an addition of 5 per cent of ethylic ether, extracted from the alcohol itself, and one one-thousandth of methylene blue as a denaturant. The railway motor car in which it was used was manufactured by a German company; it has a capacity of 62 passengers, is provided with two motors of 100 horsepower and 1,200 revolutions, and is capable of making 84 kilometers an hour.

Some Get the Breaks And Some Do Not

As I look back over my 50 years of business life, I cannot understand the whole thing. All I can do is to wonder how it all happened. Here I am, a not over-good business man, a second-rate engineer. I can make poor mechanical drawings; I play the piano after a fashion; in fact, I am one of those proverbial jack-of-all-trades who are usually failures. Why I am not, I can't tell you.

Luck, opportunity, chance, call it what you will, there is something that certainly gives some men more than an even break. I have known thousands of men with more ability than I have, some I am certain were better executives, others were much abler engineers, but things somehow or other just did not go with them.—*Charles M. Schwab.*

What the Newspapers Say About the Railroads

THE TIME may come when the railroad train, as we know it now, will be as obsolete as the stage coach is in 1930. We may eventually carry all of our freight by air, or shoot it from one place to another hitched to the tail of a rocket. Those things may happen, but we need not take them into present consideration. For the present, the welfare of business and of the whole people is inextricably involved in the welfare of the railroads. We have been accustomed to thinking that business makes the railroads. In a stricter sense, the railroads make business. They have pioneered everywhere. They led the way in the settlement of the frontier, and made the communities which now assume that they have made the railroads. In the last five or six years the railroads have contributed more to the expansion and prosperity of business than has any other factor, not excepting the Federal Reserve System. And yet there is developing something of a business philosophy which says that we are losing our dependence on the railroads and are less concerned than we used to be in their welfare. The railroads have gone further than there was any economic justification for their going, in the direction of new capital investment to provide better service to the public. If they are not allowed to earn a reasonable return on capital account in the future, this country certainly will return to railroad conditions of ten years ago, when car shortages were a seasonal problem and a seasonal menace, when long-time buying and inventory speculation in every business were necessitated by the delays and uncertainties of delivery.

—Chicago Journal of Commerce.

Enginehouse and Otey Avenue Bridge, Over the Frisco's $1,750,000 Terminal at Yale, Tenn.

The Safety Appeal

The railroads have taken the lead in a movement (for greater safety) which has spread to other branches of industry. After all that has been said and done in these recent years for safety it can be only the foolish man—the careless, unthinking man—who still resists the safety appeal. To paraphrase, eternal vigilance is the price of safety, and the sooner we realize this and act accordingly that much sooner will our chances for longevity be materially increased.

—Newport News (Va.) Press.

Give the Railroads a Chance

Let's be reasonable with the railroads. Give them a chance to make money so as to insure our prosperity through proper transportation.

Let's give the railroads a square deal.

—The Dixie Magazine.

Railroads Bring Prosperity

Not only does the nation depend for the most part upon the railroads for long distance travel and haulage, but much prosperity. The railroads carry our farm products; manufactured goods and all manner of minerals to market. The demand upon them is terrific and the railroads can meet that demand and maintain equipment, make improvements and keep up schedules only by imposing profitable rates for freightage. How much of the revenue collected goes back to the people through circuitous channels may be gleaned from the fact that last year the railroads of the United States spent $1,396,000,000 for materials and supplies and $772,000,000 for new equipment, or an average of $78.80 for every family in the country. The sums specified do not include wages and salaries. Railroad purchases aid all business and help support workers in many lines. They spent $364,392,000 for fuel alone in 1929, thus paying one dollar out of every four which miners earned; one-fourth of the wages of the entire lumber industry, and one-fifth the wages of all persons employed in the steel industry. The greatness of a nation is oftimes measured by its railroads.

—Wheeling (W. Va.) Register.

Waste and Carelessness

If the railroads of the country can effect such large savings through the curbing of unnecessary waste and carelessness, why cannot other corporations, great and small, make proportionate savings? Why cannot partnerships and individuals do the same?

All businesses conducted on what is at least assumed to be business-like principles can profit handsomely by emulating the course of the railroads in the matter of waste and carelessness.

—Steubenville (Ohio) Herald Star.

It Has Been Known to Happen, But the Cog-Wheel Engine Doesn't Slip Very Often. Still, Once Is Enough. This One Is In Switzerland.

Memories of An Old Train Dispatcher

By Harry W. Forman

ANOTHER tragedy, heartbreaking to me, is recalled at this moment. A westward freight was given an order to meet a freight in the opposite direction at a station ten miles in advance.

Sometime after having instructed the crew of the eastward train to pull down to the end of the long siding at the meeting point, the conductor of the westward train reported having a car off the track which would require the wrecking crew to replace. The meeting point was changed accordingly, the order being sent to the eastbound train by a tramp who had been allowed to sleep in the waiting room. It then developed that the eastward train had a disabled engine and could not proceed until another was provided. Meantime the crew of the westward train had got the car back on the rails and gone to the west end of the two mile siding, where the later order directed the trains to meet. This situation was aggravated by having given these trains six hours' time on an important passenger train which was being detoured because of a wreck on another part of the line and which was expected to be delayed at least six hours, but showed up at the end of my district only two hours late. This incident, only one of many in the ordinary almost daily experiences of every dispatcher, occurred at 4:00 a.m. The next day I was called out of bed to come to the office to explain my inexcusable lack of judgment. I recall there was a saloon under our office having an inscription above the door reading, "The Road to H—;" also there was a nice park near the station. No mention will be made as to my movements after having been "on the carpet." I do not recall having heard any birds singing in the park that day.

At the age of 15 I was offered and needless to say accepted a position as train dispatcher, car accountant, assistant storekeeper and general clerk, at a salary of $50 a month.

My first order fixed a meeting point between Nos. 3 and 4, the only trains on the road. First the operator at the place of meeting was ordered to display a red flag and hold these trains for each other, next the ruling train No. 4 was held for orders, after which No. 3 was instructed to meet No. 4. At that time all orders ended with the injunction, "12," which meant "How do you understand?" The conductors of trains addressed signed their names to orders endorsing thereon the symbol "13," which meant "I (or we) understand." Having accomplished the meeting of Nos. 3 and 4 successfully, I was emboldened to experiment with another form of order the next day, No. 4 being ordered to meet No. 3 at W. and No. 3 directed to run to W. regardless of No. 4. The old 30-minute rule was in effect on that road at that time, but apparently was not well understood by me, consequently I was very much disgusted with the crew of No. 3 because they not only ran to W. regardless of No. 4, but kept going until this train was seen approaching about two miles beyond that station.

Feeling that the wording, "Avoiding regular trains" was unnecessarily lengthy, I succeeded in getting the superintendent to issue instructions to the effect that hereafter the words "run extra" would be used instead. Our staunchest supporters among the trainmen shook their heads and expressed themselves as fearing that we were becoming reckless, the new form not impressing them as being as safe as the one formerly used.

During this, my incubative period, a slide occurred between R. and W. The crews of Nos. 3 and 4 were given orders to work between these stations regardless of all trains. It has occurred to me since that, had the obstruction been cleared that day, possibly these trains might have collided. All that prevented this was the fact that the slide really was, as reported, impassable and one crew being south, while the other was north of the interruption.

Years afterward I was amazed to find that, on occasion, the dispatchers in another part of the country were taking somewhat similar chances until a collision resulted, when the practice was discontinued. The accident came about through the dispatcher reasoning that, since a southbound regular freight train could only make a certain blind siding for an opposing passenger train, it ought to be perfectly safe for him to order a northbound extra to run ahead of that passenger train and meet the regular freight at that blind siding. The crew of the regular freight found that by exceeding the prescribed speed of 15 miles an hour they could go farther, and attempted to do so. The crew of the regular freight was held responsible for the collision, it having been clearly proved that they were exceeding the speed limit by at least ten miles an hour.

This is another installment of the interesting paper on Old Time Dispatching delivered some time ago before the Pacific Railway Club by Mr. Forman of the Western Pacific Ry.

A stout woman, wedged into a crowded car, was having difficulty in getting into her tightly buttoned jacket pocket to extract a fare.

"Madam," said the man next to her, during her fruitless struggles, "let me pay your fare."

She protested rather indignantly.

"My only reason for wishing to do so," he said, "is that you've unbuttoned my suspenders three times trying to get into your pocket."

ATTENTION—RAILROAD MANAGERS

TIME IS MONEY!

Saving an hour a day in making up a freight train is the same as saving the equivalent value of that hour in dollars and cents, or

Having the use of the equipment an extra hour per day, or

Having the use of so much additional equipment for transportation purposes.

EXPERIENCE

Ten years continuous operation of the American Automatic Connector has demonstrated not only the great saving in time in making up trains, a greater expedition in the handling of all trains, the elimination of all accidents due to the coupling and uncoupling of the hose, but has also demonstrated like material savings in fuel, hose, gaskets and general wear and tear on equipment.

INVESTMENT

Universal adoption of the AMERICAN automatic hose coupler by the railroads would mean operating economies and savings per annum substantially equal to its cost.

This is an exceptional investment, is it not?

Your closest inquiry and inspection is invited.

THE CONSOLIDATED CONNECTOR CORPORATION
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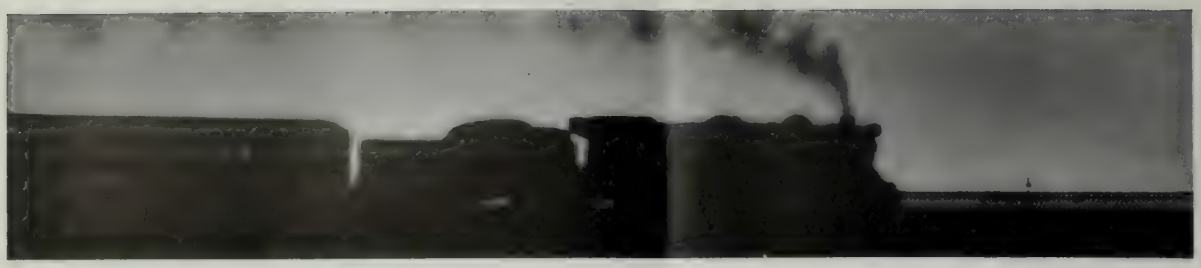

The News of the Month

What's Been Going on in Transportation, Railroads, Automotive, Supply, Aviation

HALE HOLDEN, chairman of the executive committee of the Southern Pacific Company, confirmed reports July 24, that this railroad has acquired substantial holdings in the St. Louis Southwestern (Cotton Belt) Railway and that it has an option on other stock in sufficient amount to give it control of the line. The stock was acquired from the New York Investors, Inc., which brought the stock from the Kansas City Southern following the collapse of the Southwestern merger plan of L. F. Loree.

The deal is completed subject to approval by the Interstate Commerce Commission. That body in its final consolidation plan allocated the Cotton Belt to the Illinois Central. However, the Southern Pacific interests believe they will be able to obtain the permission of the commission for changing the disposition of the Cotton Belt.

The Cotton Belt operates 1800 miles of railroad and serves the eastern and southeastern portion of Missouri and Southwestern Illinois. Its lines traverse Arkansas from northeast to southwest and reach points in Northern and Northwestern Texas connecting with the Southern Pacific at different places.

"The steadily increasing interchange of business between the Southern Pacific and Cotton Belt routes," said Mr. Holden, "affording direct connection from the Southern Pacific to the St. Louis and Memphis gateways and intervening territory, influenced the Southern Pacific Company to take this step. It believes it will insure the preservation of existing routes and channels of commerce in harmony with provisions and policies of the Transportation Act, and the betterment of service afforded by the Southern Pacific."

The deal puts the Southern Pacific in the position of apparently being the first railroad which will apply for approval of a merger in connection with the commission's final consolidation plan.

Making Jobs in Canada

Approximately 12,000 extra men will be employed this summer in the Canadian Pacific Railway's program of construction, maintenance and improvement of its transcontinental system in Canada, about 8,000 being employed directly by the company and the remainder by contractors. The work will include erection of a new hotel by the Dominion Atlantic, a subsidiary, at Kentville, Nova Scotia.

Fast Air Rail Service

Rail-and-air service has been established between the Pacific Northwest and the Atlantic seaboard by the Chicago & North Western Ry. and the Mamer Air Transport Co. This service, with that established not long ago from St. Paul-Minneapolis to Spokane by the North Western and the Kohler Aviation Co. from Chicago to Milwaukee and over the lake to Grand Rapids cuts the time from Sopkane to New York from 81 hours to 44 hours and 30 minutes. Between Chicago and Spokane the time is reduced to about 23 hours on the eastward trip. Planes will leave Spokane at 7 a.m. and reach St. Paul at 8 p.m., eleven hours. On the westward trip passengers will use the C.&N.W. from Chicago to St. Paul and complete the trip by air to Spokane, in all 24 hours and 30 minutes from Chicago to Spokane.

Lackawanna Electric Work Nearly Finished

Rapid progress is being made by the Lackawanna Railroad in the completion of the electrification of its suburban lines in Northern New Jersey, according to a statement made by the company.

The concrete footings for the catenary or overhead wiring system are practically completed; 82% of the catenary supporting structures are in place and 41% of all of the wiring has been strung. The five sub-station structures are 96% completed and more than half of the transforming, rectifying and other electrical apparatus for them is in place.

The new steel motor cars have begun to arrive from the builders and are being shunted to Kingsland where the motors are being installed by the railroad's own forces to avoid the necessity of shipping them to Chicago for installation.

A number of the completely converted trailer cars have returned from the shops and early in August, when several of the completed units are ready for operation, the "juice" will be sent through the wires over a stretch of track between Bergen Junction and Secaucus or Harrison and the "steam-bred" operating crews, who long have been studying the fundamentals of electric train operation and acquired an electric complex, will operate trains back and forth until they become past masters in the art of handling "juice powered" trains.

Motive Power of Tomorrow

One day has been set aside, September 24, during the forthcoming convention of the Traveling Engineers Assn., at the Sherman, Chicago, to discuss the interesting subject, "Motive Power of Tomorrow." This will be considered from the viewpoint of designer, builder and owner. These speakers have accepted invitations to take part in the discussion:

Designers, George L. Bourne, the Superheater Company; S. G. Down, Westinghouse Air Brake Co.; John E. Muhlfeld, Muhlfeld Engineering Corpn.; Silas Zwight, Northern Pacific Co.; Paul K. Kieffer, New York Central Railroad Co.

Builders, George H. Houston, Baldwin; William C. Dickerman, American; W. E. Woodard, Lima.

Users, Paul Shoup, Southern Pacific Co.; W. W. Atterbury, represented by T. W. Demarest, Pennsylvania Railroad; Sir Henry Thornton, Canadian

National Railways, to be represented by an executive of his choosing; M. Cabrera, National Railways of Mexico. President R. H. Aishton, of the A. R. A., will open the discussion.

Revenue Loading Declines

Loading of revenue freight for the week ended on July 26 totaled 919,349 cars, the car service division of the American Railway Association reported August 6. This was a decrease of 8,907 cars under the preceding week, and a reduction of 183,204 cars below the same week in 1929. It also was a decrease of 114,977 cars below the same week in 1928. Miscellaneous freight loading for the week of July 26 totaled 354,935 cars, 73,842 cars under the same week in 1929 and 53,775 cars under the corresponding week in 1928. Loading of merchandise less than carload lot freight amounted to 230,986 cars, a decrease of 27,053 cars below the corresponding week last year and 24,310 cars below the same week two years ago.

Grain and grain products loading for the week totaled 63,637 cars, a decrease of 6,480 cars below the same week in 1929 but 8,332 cars above the same week in 1928. In the western districts alone, grain and grain products loading amounted to 45,236 cars, a decrease of 5,648 cars below the same week in 1929.

Live stock loading totaled 18,769 cars, 5,355 cars under the same week in 1929 and 3,268 cars under the corresponding week in 1928. In the western districts alone, live stock loading amounted to 14,217 cars, a decrease of 4,183 cars compared with the same week last year.

It Isn't True, Says the Pennsylvania

Charges made by the Interstate Commerce Commission that the Pennsylvania Railroad violated the Clayton Anti-trust Act by acquiring control of the Wabash and Lehigh Valley railroads indirectly through its subsidiary, the Pennsylvania Company, were denied by counsel for the two affiliated companies in a brief filed with the commission on August 1.

The brief was submitted in support of the railroad's contention that the acquisition of Wabash and Lehigh Valley stock by the Pennsylvania Company has in no way affected competition between those railroads and the Pennsylvania Railroad.

Traveled Much, and Stayed at Home

Born and reared in Elmira, N. Y., drove locomotives 1,152,000 miles—upward of 46 times around the world—in 40 years, all within the city limits, retired, and proposing to spend the rest of his days there enjoying the companionship of his family and his home, is the unique record of Daniel O'Brien, engineer on the Lackawanna Railroad, whose name has just been entered on the honor roll of the company. O'Brien entered the service as an engine wiper. His work was done so well that he promptly acquired the nickname of "Shiner" and then set out to make a record which lived up to the name. He became an engineer, but his entire service of 40 years was confined to the Elmira Yard, which accounts for the peculiar fact that he traveled so much in so small a radius.

N. Y. C. Elevating Tracks at Syracuse

After 18 years of effort toward the solution of the grade crossing problem in Syracuse, N. Y., work has actually started on the first of a series of contracts for the elevation of the New York Central passenger tracks over the West Shore Railroad route through the city. The entire project, including new freight yards and new passenger station, will cost about $30,000,000, and will require at least three years to complete.

Engineers estimate that this terminal will have facilities for the efficient handling of 660,000 tons of freight a year, with a minimum rate of 2,100 tons a day. The revenue is to be derived from a sum to be contributed by the railroads on tonnage of freight handled at the terminal, the association of transportation companies operating the central freight unit.

Since the city will retain all air rights over the site, it plans to erect over the terminal a 14-story structure to house offices and lofts suitable for light manufacturing and storage. The plans call for an attractive building, quite unlike the old-time freight terminal.

Bids for Boulder Dam Railroad

The Union Pacific called for bids August 6 covering the building of a 29-mile link between its main line and the site of the Boulder Dam. The first work will employ about 300 men for six months. Work will begin October 1.

The 29-mile branch line will leave the main line half way between Bracken and Pierce, Nev., seven miles south of Las Vegas, and 327 miles from Los Angeles.

The proposals call for bids on the grading and trestle and culvert construction for the 22-mile link which is to run from the main line to Summit, the junction with the 7.13 mile line, which will be built and operated by the government. The government line will run directly to the main construction center and damsite.

Nineteen contractors of Los Angeles, San Francisco, Denver, Omaha, Salt Lake City and Ogden were offered the opportunity of bidding on the work,

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SPRING FROGS

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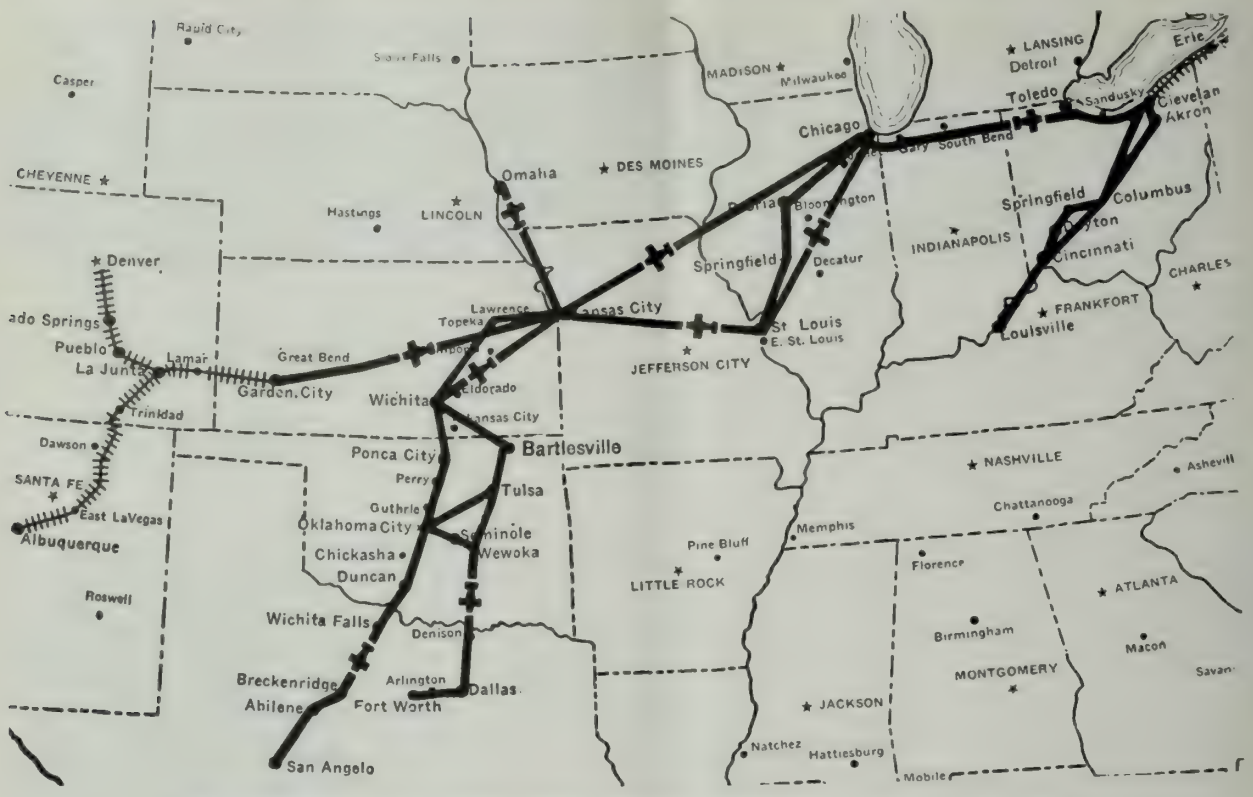
Are giving excellent service under severe traffic conditions on Railroads using them.

Twenty years successful service by CONLEY TYPE FROGS have demonstrated their merit for safe and economical service.

CONLEY FROG & SWITCH CO.

Memphis, Tenn.



Map Showing Route of Universal Air-Rail Transport Between Los Angeles and the East.

which will cost approximately $2,500,000, met by the recent government allocation of $10,600,000.

Bids, to be opened September 5, involve the removal of more than 300,000 cubic yards of dirt and rock, and the construction of 42 trestles.

Under a contract signed by the government August 1, the line will be built in three sections, the first 22 miles at the expense of the railroad, and the final seven miles down heavy grades at government cost. The Union Pacific will do the work on the last link, a cog-road, on a basis of cost plus 10 per cent.

Grain Rates Lower Oct. 1

A general reduction in grain rates throughout western territory and to principal seaports was ordered by the Interstate Commerce Commission, to become effective October 1.

Members of the commission estimated the application of the new schedules will reduce earnings of western railroads by $15,000,000, but that some of this had been compensated for by recently granted increases in classified freight rates.

A new method of making schedules, described as "the ratebreak basis," was prescribed for the railroads to follow. This rate form was sought by the business interests of nearly all the great western primary grain market cities.

Under the new system one rate will apply on wheat and other grain and grain products such as flour and meal. The commission considered proposals to establish a system of export rates definitely lower than the schedules applying to domestic shipments but rejected it and left the present relationship between export and domestic rates substantially unchanged.

Among specific new rates in more important wheat producing and handling territory as compared with existing schedules are:

From California producing points to San Francisco reductions were ordered ranging up to 25 per cent and similar changes were indicated to Los Angeles.

To the Pacific Coast from Eastern Colorado the wheat rate will become 53 cents against 59.

I.C.C. Authorizes Barge Lines

Operation of barge line facilities by the Mississippi Valley Barge Line Co. on the Ohio and Mississippi Rivers between Cincinnati and New Orleans has been authorized by the Interstate Commerce Commission. The commission acting under the recently enacted Denison Act has found that operation of such a facility on these waters is in the public interest.

The decision also requires railroads to join with the government subsidized barge line in the operation of through routes and joint rates on traffic between points in central territory and southern and southwestern territories over the barge lines and connecting rail carriers.

The commission's order requires railroads connecting with the new barge line to establish rates for such routes by October 1.

Key System Is Sold for $8,005,200

The Key System Transit Company was sold at auction on the steps of the Alameda county Courthouse August 6 for $8,005,200.

Subsidiaries of the Railway Equipment and Realty Company were the buyers.

The East Bay Street Railways, Ltd., bought the Oakland street car system for $1,000,000.

The Bay Ferry System and its electric lines were sold to the Key System, Ltd., for $1,000,000. The Key mole and terminal facilities were purchased by the Key Terminal Railway, Ltd., for $1,000,000.

Motor Bus Service was sold to the East Bay Motor Coach Lines, Ltd., for $5000.

All operating property of the old company was bought by the holding company for $5,000,000.

Hanshue Changes Positions

James M. Schoonmaker, Jr., has been elected president of the Fokker Aircraft Co. and president of the General Avia-

tion Corpn., the aircraft division of the General Motors Co., to succeed Harris M. Hanshue at both posts, it is announced by James A. Talbot, chairman of the board of the General Aviation Corpn.

"Due to the increased responsibilities which Mr. Hanshue has assumed in connection with Western Air Express," said Mr. Talbot's statement, "he has resigned as president of General Aviation and the Fokker Company to devote his time to the transport end of the aviation business. Mr. Hanshue remains as a director of the General Aviation Corporation."

William T. Whalen has resigned as vice president of the Fokker Company, it also was announced, and will return to the General Motors Corpn. in Detroit.

Mr. Schoonmaker was chief engineer of the Dayton-Wright Co. during the war, when that organization was a large producer of military aircraft. He formerly was associated with the Standard Steel Spring Co. of Pittsburgh.

Air Cargo Pouch Meets Fire Test

A fireproof cargo pouch for air express and air mail, the result of almost three years' research and experimentation, successfully withstood a fire test recently at the Chicago municipal airport, in the presence of representatives of Chicago banks and officials of the Railway Express Agency, the postoffice and air transport lines, says the American Banker.

The pouch, constructed of specially treated asbestos, was designed by experts on fire protection of the Johns-Manville Co., cooperating with National Air Transport. It is intended for protection of extremely valuable express and mail shipments, such as negotiable securities and jewelry. A number of the pouches are to be placed in service on the N. A. T. lines at once.

Packed with parcels and packages of letters, the pouch was placed in a fire made of oil and gasoline saturated wood and rubbish. After 15 minutes had elapsed the pouch was withdrawn from the blaze and opened. The contents were unharmed.

Mahaffie Succeeds Woodlock

The appointment of Charles D. Mahaffie, for some years finance director of the Interstate Commerce Commission, to membership on the commission, was announced August 2 by the President. Mr. Mahaffie succeeds Thomas F. Woodlock, resigned. Mr. Mahaffie is 45 years old, was born on a Kansas farm and reared in Oklahoma. He was graduated from Kingfisher College, now a part of the University of Oklahoma, and as winner of a Rhodes scholarship, he later passed three years at Oxford. After a few years in the private practice of law, Mahaffie entered the federal government service as a solicitor in the interior department under the late Secretary Franklin K. Lane. He was acting as solicitor for the federal director general of railroads, James C. Davis, in 1922, when he was asked to assume the office of director of the finance bureau of the Interstate Commerce Commission.

An Optimist at Luncheon

B. C. Forbes, noted economist, told 200 business men at a special luncheon, August 11, at the Los Angeles Biltmore, that an early recovery in all backward lines of business is assured. Mr. Forbes based his prediction of early recovery on the fact that new wealth is being created daily and that the people are turning toward stocks and bonds for their investments.

"The American people have never been in the doldrums very long," he said. "We are the most irrepressible, energetic, ambitious nation on the face of the earth. Just as I couldn't follow the 'bullishness' of Wall street a year

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and longer ago, neither can I now follow the terrific gloom and pessimism. The inflation of a year ago was more severe than the deflation now. That deflation is beyond all reason. Business in general will recover very soon, and the first decisive signal indicating the recovery will come from the stock and bond market. We are headed in the right direction now."

Leadville Line Doesn't Pay

The Colorado & Southern Railway has applied to the public utilities commission of Colorado for permission to abandon all passenger train service between Denver and Leadville, declaring that practically all travel is carried in automobiles and that the railroad is losing about $40,000 a year through the operation of its passenger service alone. The C. & S. is a narrow gauge line 151 miles long, owned by the Burlington which bought it in 1898. The application says that since that year "large deficits and losses" have been sustained every year. For the past ten years the operating losses, after payment of taxes and including the results of operating the Alma branch, "have amounted to practically $400,000 a year."

Valuable Catalogs, Well Printed

The Whiting Corporation of Harvey, Ill, a Chicago suburb, has just issued two bulletins of outstanding merit: Operation and Maintenance of Whiting Railroad Equipment, and Modern Methods in Repair Shops. Either or both may be obtained from the general offices at Harvey.

The Whiting bulletins have an appeal wholly apart from contents and information; the psychological. This is created by excellent paper stock, intelligent selection of type faces, which means the lines can be read at a glance, and exceptionally good make-up. A handsome catalog or book, like good stationery for letters, commands respectful attention.

The First Five Months Net 3.68 Per Cent

Class I railroads in the first five months of 1930 had a net railway operating income of $307,659,543, which was at the annual rate of return of 3.68 per cent on their property investment, according to reports just filed by the carriers with the Bureau of Railway Economics. In the first five months of 1929, their net railway operating income was $457,017,242 or 5.58 per cent on their property investment.

Order to Build Is Postponed

Order of the Interstate Commerce Commission requiring the Oregon-Washington Railroad & Navigation Company to build 180 miles of new line from Crane to Crescent Lake, Ore., at an estimated cost of from $9,000,000 to $11,000,000, effective July 1 1930, has been postponed until Jan. 1, 1931.

Postponement of the date on or before which the Union Pacific subsidiary was to have begun construction of the line despite its opposition to the project, was made by the commission at the request of the United States district court, district of Oregon.

The court's request for a postponement of the effective date of the commission's order is due to an appeal from the commission's decision now pending in the court on behalf of the railroad.

Leeds & Tozzer Car Washing Machine.

A Car Washing Machine

The cars of the Philadelphia Rapid Transit Co. should be and no doubt are showing a marked improvement now that they are being subjected to the minstrations of five Leeds & Tozzer car washing machines, installed at the various car yards and barns of the transit company. Whereas the cars formerly were cleaned every 12 days, they now get a bath every five days. Only three men are required for the operation: one to clean the front and rear ends of the car, one to remove and replace the window screens and one to handle the controls of the car as it passes through the machine.

The operation of the machine itself is automatic. It consists of four standards, two set up on each side of the car washing track, each standard carrying a motor-driven revolving brush. As the car approaches the brushes it passes between two perforated vertical water pipes which thoroughly spray the car and soften any accumulation of dirt. After the car has passed the brushes, spray from another set of perforated pipes rinses the car and washes off the loosened dirt. The starting and stopping of the four brush motors, and the turning on and off of the water is controlled by electric devices actuated by switches in the trolley wire. The trolley wire, by the way, is insulated at this section from the regular line, and the voltage reduced to give the car the proper speed through the machine, about 50 feet a minute. Fifteen to twenty cars can be washed in an hour. The usual practice is to wash 75 cars every morning. The usual rush following a rain storm is handled easily. It is said that through reduction in labor the cost of the machine can be saved in eight months.

J. M. Manual Is Ready

Manual No. 102, issued by the Johns-Manville Co., shows this company supplies a large variety of power plant materials for improving performance, increasing capacity and reducing operating costs. Insulation is particularly important in insuring economical operation of power plant equipment. Fuel cost is one of the principal items of expense wherever heat is generated, and the problem of fuel conservation is a matter of major consequence. The manual may be procured by addressing the company at 292 Madison avenue, New York, or any of its 71 branch offices in every large city.

Golden Gate Bridge Plan Approved

Plans of the Golden Gate bridge and highway district for a suspension bridge across the Golden Gate at San Francisco were approved by the war department.

The bridge will have the longest span of any bridge in the world and a greater vertical clearance. In view of the magnitude of the work the district was allowed more than the ordinary periods of time for beginning and completing it, the war department prescribing three years and seven years, respectively.

Westinghouse Engineers Win Prize

The American Institute of Electrical Engineers committee on the award of institute prizes has named R. C. Dickinson and B. P. Baker, electrical engineers, Westinghouse Electric & Mfg. Co., as the recipients of the national first prize in the field of engineering practice for their paper entitled, "Structural Development of the De-ion Circuit-Breaker," presented at the winter convention of the A.I.E.E., New York, January 28-February 1, 1929.

B. & O. Gets the Alton

The Baltimore & Ohio Railroad has acquired control of the Chicago & Alton, a 1,100 mile carrier serving the territory from Chicago south and southwest to St. Louis. The road, valued at $100,-

000,000 has been in the hands of receivers since 1922. As the Chicago & Alton was assigned to the Baltimore & Ohio in the railroad consolidation plan announced by the Interstate Commerce Commission last December, no objection to the present transaction is expected from that source. In fact it is stated that the commission, already informed of the purchase, has given an informal expression of approval of the deal.

Robbery Loss Reduced

Losses in 1929 due to robbery of freight while in transit on the railroads of this country and Canada, were the smallest for any year since 1914, although the volume of freight traffic is now 57 per cent greater than it was 15 years ago, according to reports for the year from the carriers by the freight claim division of the American Railway Association.

Bus Orders

The general business depression does not seem to have affected bus manufacturing. General Motors Truck Company reports one of its record business months in July, with the following deliveries: 127 city service buses, to Public Service Coordinated Transport of N. J.; two 21-passenger buses to Virginia Public Service Co.; three 21-passenger buses to British Columbia Electric Ry.; two 21-passenger buses to Central Transportation of Illinois; 10 38-passenger, city service, coaches to Philadelphia Rapid Transit; four 21-passenger, city service coaches, and six 29-passenger, city service, buses to Coast Cities Railways of Asbury Park, N. J.; three 29-passenger coaches to Boston & Maine; 14 buses to Toronto Transportation Commission; five 21-passenger, city service coaches, to Waverly, Sayre, & Athens Traction Co.; one 21-passenger, city service coach to Union Street Railway Co., New Bedford, Mass.; two 33-passenger observation coaches to Southwestern Transportation Co.; one 33-passenger observation coach to Richmond-Greyhound Lines (in conjunction with Richmond, Fredericksburg & Potomac); 10 21-passenger, city service, coaches to Reading Transportation Co.; five city service, yellow coach units, to Pittsburgh Motor Coach Co.; one 38-passenger, city service, coach to Boston Elevated Railway; and two 21-passenger buses to Sioux Falls Tranction Co.

Mack International Motor Truck Company reports the following distribution of its product: One bus chassis to Klein & Cammel, New York City; one bus chassis to Catherine Mailley, New York City; one 29-passenger, city type bus to C. Montevechi, Chapaqua, N. Y.; one 38-passenger, city type bus to Multonah Transit Co.; one 29-passenger, city type, bus to I. Myerovitz, Baltimore, Md.; one 29-passenger, city type bus to Leavenworth Transportation Co., Kansas City, Mo.; 20 29-passenger, Interstate buses to Interstate Transit Inc., of Cincinnati, Ohio; one 29-passenger bus to James Clayton, Lakewood, N. J.; seven 33-passenger, Interstate buses to Colonial Motor Coach Corpn., of Syracuse, N. Y.; one 33-passenger bus to Leon Cranner, Beach Haven, N. J.; five chassis to Fishkill Electric Ry. Co.; one bus chassis to Garfield & Passaic Bus Co., Garfield, N. J.; three 29-passenger Interstate buses to Georgia-Florida Motor Lines, Inc.; one 29-passenger, Interstate bus to F. Himpler, Syracuse, N. Y.; two bus chassis to F. Hungerford, Delma, N. Y.; one bus chassis to Huntington Beach Union H. S., Huntington Beach, Calif.; two 29-passenger, city type, and four 38-passenger, city type buses to Brooklyn Bus Corpn., Brooklyn, N. Y.; four 29-passenger, city type, two 25-passenger, city type, and eight bus chassis to Carpenter's Rapid Transit of N. Tonawanda, N. Y.; three 35-passenger, suburban type buses to Acme Lines, Inc., Webster, Mass.; one 33-passenger bus

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to W. Atkinson, Tuckerton, N. J.; one 29-passenger, city type bus to Bohl Brothers, Latham, N. Y.; one 38-passenger, city type bus to Charles Vollmer, Amsterdam, N. Y.; one bus chassis to Queen City Coach Co., Charlotte, N. Y.; two 29-passenger, Interstate buses to Rawding Auto Bus Line, Inc., Boston, Mass.; two 29-passenger city type buses to Rollo Transit Company, Keyport, N. J.; one 29-passenger, city type, bus to Schenck Transportation Co., Floral Park, N. Y.; one 29-passenger, city type bus to Suburban Bus Co., White Plains, N. Y.; one 38-passenger, city type bus to Tacoma Bus Company of Tacoma, Wash.; one bus chassis to Troy Fifth Avenue Bus Co., Troy, N. Y.; five 25-passenger, city type, gas-electric, and three 29-passenger, city type, buses to Public Service Coordinated Transport of N. J.; and 10 bus chassis to Pickwick-Greyhound Lines, Kansas City, Mo.

American Car & Foundry Company made the following deliveries during July: five 40-passenger, all-steel metropolitan coaches to Boston Elevated Railway; three street-car type, 23-passenger, buses to Illinois Power & Light Co.; one street-car type, 33-passenger coach to Citizens Transit Co., Oil City, Pa.; four parlor coaches, 21-passenger, to Fort Dodge, Des Moines & Southern, and four parlor cars, 33-passenger, to Union Pacific System, Portland, Oregon.

The Twin Coach Co. deliveries in July included one trolley bus to Brooklyn Queens Transit Co.; three urban buses to Milwaukee Electric Ry & Light Co.; eight urban buses to Aronimink Transp. Co., Upper Darby, Pa.; two urban buses to United Electric Rys., Providence, R. I.; and five urban chassis for export to Oslo, Norway.

Freight Cars

The car service division of the American Railway Association reports 49,208 new freight cars in service during the first six months of 1930. In the same period last year 32,794 cars were placed in service. Of the new cars installed, 26,016 were box cars, an increase of 10,820 compared with such installations in the first half of 1929. There were also 18,343 new coal cars placed in service the first half of this year as compared with 11,482 installed during the same period last year. In addition, the railroads in the first six months of this year installed 2,963 flat cars, 1,099 refrigerator cars, 487 stock cars, and 300 miscellaneous cars.

On July 1 the railroads had 24,649 freight cars on order, compared with 39,638 cars on order on the same date last year, and 14,659 on this day two years ago. Freight cars leased or otherwise acquired are not included in these figures.

The reports of the association show that on July 22, there were 463,605 surplus freight cars in good repair and immediately available for service. This was a decrease of 8,346 cars compared with July 14, when there were 471,951 cars.

Surplus coal cars on this date totaled 168,399, a decrease of 4,041 within about a week, while surplus box cars totaled 239,384, a decrease of 4,598 cars for the same period.

Reports also showed 26,042 surplus stock cars, a decrease of 446 cars below the number reported on July 14, while surplus refrigerator cars totaled 15,205, an increase of 259 for the same period last year.

On July 15, Class 1 railroads had 143,352 freight cars in need of repairs or 6.4 per cent of the number on line. This was an increase of 2,758 cars above the number in need of repair on July 1, when there were 140,594, or 6.3 per cent.

Freight cars in need of heavy repairs on this date totaled 98,826 or 4.4 per cent, an increase of 3,141, compared with July 1, while freight cars needing light repairs totaled 44,526, or 2.0 per cent, a decrease of 383, compared with July 1.

Inquiries for new freight car equipment since our previous issue are as follows Youngstown Sheet & Tube Co. for 10 70-ton flat cars; Rio Grande do Sul, Porta Alegre, Brazil, for 39 thirty-ton coal cars; Solvay Process Co., Syracuse, N. Y., for 10 air dump cars; Lehigh & New England for 300 50-ton steel box cars and five steel cabooses; Western Fruit Express for 100 steel underframes in addition to 100 previously reported; Illinois Steel Co. for 95 ingot cars, and Cerro de Pasco Copper Corpn. for two tank cars.

Since our previous issue the Canadian National has ordered 400 forty-ton refrigerator cars, 200 to be built by the Eastern Car Co. of Glasgow, N. S., and 200 by the Canadian National in its own shops at London, Ontario, and Winnipeg. These cars will have steel underframes and cast steel side frame trucks. The interiors will be equipped with divided basket bunkers. Journal boxes will be cast integral and have cast steel bolsters equipped with Barber lateral motion rollers over the truck springs. A brake designed by the Canadian National with a rod fastened through the web of the bolster will be used. This type of rigging prevents brake rod, or brake-beam dropping down. Other orders to date include the following: United States navy department, two 50-ton box cars and two flat cars of similar capacity from the American Car & Fdry.; Western Fruit Express is building 12 refrigerator cars in its own shops; Gulf Refining Co. has ordered 250 tank cars from General American, and 250 from the Petroleum Iron Works; Detroit Edison, five 70-ton hopper cars, from American Car & Fdry.; Fruit Growers Express, 154 refrigerator cars, building in its own shops; American Agricultural Chemical Co., three tank cars from American Tank Car Corpn.; Electro Metallurgical Co., one 50-ton hopper car, from American Car & Fdry.; Aluminum Company of America, 20 special and 25 70-ton hopper cars from the Canton Car Co.; Minneapolis & St. Louis, 500 box cars from General American; National Dump Car Co., 10 50-ton rock cars from American Car & Fdry.; Delaware, Lackawanna & Western, 25 all-steel 70-ton drop end gondola cars, with steel floors, from Magor Car Corpn.; Western Electric, ten flat cars, from Koppel,; Chicago & North Western, 10 flat cars from American Car & Fdry.; the Viscose Company, two flat cars, from Pressed Steel Car.; Anglo-Chilean Consolidated Nitrate Corpn., 350 thirty-ton ore cars from Koppel and the Inter-State Iron Co., 42 air-dump cars from Koppel.

Locomotives

Reports filed by the carriers with the car service division of the American Railway Association show that Class 1 railroads had, on July 15, 8,475 locomotives in need of repair, or 15.2 per cent of the number on line. This was a decrease of 509 locomotives compared with the number in need of repair on July 1, when there were 7,966, or 14.3 per cent.

Locomotives needing classified repairs on July 15, totaled 4,753 or 8.5 per cent, a decrease of 238 compared with July 1, while 3,722 or 6.7 per cent needed running repairs, an increase of 271 above the number needing such repairs on July 1.

Class 1 railroads had 8,137 serviceable locomotives in storage compared with 7,949 on July 1.

The Lehigh & New England has been inquiring for three heavy switching locomotives and two freight locomotives of the 2-10-0 type. The Pieping-Mukden, (Tientsin, China,) is inquiring for six locomotives of the 4-6-2 type and 14 locomotives of the 2-8-2 type, and the Inter-State Iron Co. for three engines.

The Aluminum Company of America has ordered one ten-wheel switching locomotive from Baldwin, for service on

the Alton & Southern; The Salt Lake & Utah, one 60-ton electric locomotive to be built jointly by Westinghouse and Baldwin. The Reading, 10 tenders from Baldwin, and the Canadian Pacific 10 heavy duty, eight-wheel, switch engines from the Canadian Locomotive Co.

New locomotives on order on July 1, this year, totaled 364, compared with 386 on order on the same day last year, and 106 two years ago.

Passenger Car Orders

Since the July issue of *Transportation* orders for new passenger car equipment have shown a marked decrease, with only two orders and one inquiry since our previous report. The orders are by the Union Pacific for 14 chair cars placed with Pullman and ten baggage and one mail and baggage car, from Pressed Steel. The Erie ordered seven through line coaches from Pullman. The inquiry is for 15 stall-less horse cars, 50 feet in length, from the Arms-Yager Co.

Railway Construction

Tracks & Yards

CANADA.—The Canadian National and the city of Regina, Sask., have agreed to build a freight line on the outskirts of the city to cost about $500,000.

LOUISIANA.—Morgan's Louisiana & Texas, and the Texas & New Orleans have permission to build two extensions near Lockport, a total of 10.4 miles, to cost $100,912.

MICHIGAN.—The New York Central and the Michigan Central have asked permission to build an extension of 7.25 miles near Grand Rapids.

PENNSYLVANIA. — The Monessen Southwestern, a subsidiary of the Pittsburgh Steel Co., is planning to build an extension from Monessen to Bellevernon, to cost about $1,000,000. This line is to be used for communication between the Monessen and Allenport mills. It will also provide an exchange branch for the Pennsylvania, the Pittsburgh & Lake Erie and the Pittsburgh & West Virginia.

TEXAS.—The Rock Island Lines and the Cotton Belt have agreed to build nine miles of track in the Trinity River levee district at Dallas. The Rock Island will build six miles at a cost of $200,000, and the Cotton Belt three miles at a cost of $150,000.

—The Rock Island has asked permission to build an extension of 4.7 miles at Dallas.

—The Houston & Texas Central has asked permission to build an extension of five miles in Harris county.

Buildings & Structures

ARKANSAS.—Arkadelphia. The Missouri Pacific has let a contract to the List & Weatherly Construction Co. for a bridge across the Ouachita River to cost $150,000.

CALIFORNIA.—Pasadena. The Santa Fe has submitted a plan to the city directors of Pasadena to eliminate grade crossings. The project, costing about $6,930,000, would be paid for by the city and the railroad. The plan provides for the elimination of 40 street crossings, double-tracking of the Santa Fe line through the city, a passenger station in the central part of the city, another at Lamanda Park, and a freight station.

CANADA.—Calgary, Alta. The Canadian Pacific has let a contract to Bennett & White, Calgary, for a two-story addition to the station here to cost about $35,000.

—Montreal. The National Terminals of Canada, Ltd., a subsidiary of the Canadian National, has let a contract to the Atlas Construction Co. for a warehouse to adjoin the present one at Grey Nun street.

ILLINOIS.—Venice. The Terminal R. R. Association of St. Louis has prepared plans for an overpass to be built at Bradway avenue. The cost will be about $500,000 to be shared by the Terminal R. R. Association, the Illinois Terminal R. R. and the city.

—Chicago. The Chicago & North Western is receiving bids for brick and steel inbound and outbound freight houses in the Merchandise Mart here.

IOWA.—Council Bluffs. The Burlington has let a contract to the Burrell Engineering & Construction Co. for a 200,000-bu. addition to the grain elevator at Fourth street and Twenty-eighth avenue.

KENTUCKY.—Louisville. The Kentucky & Indiana Terminal has let a contract to the Henry Bickel Co., Louisville, for track elevation to cost about $270,000.

MICHIGAN.—Port Huron. The Pere Marquette has let a contract to the Jutton Kelly Co., Detroit, for the substructure for two fixed spans and one movable span for a steel bridge here. A contract for the superstructure has been let to the American Bridge Co., New York. The bridge will be 261 ft. long and cost about $500,000.

—New Buffalo. The Pere Marquette has let a contract to the Roberts & Schaefer Co. for a 300-ton capacity, reinforced concrete, 3-track Rands Shallow Pit automatic electric coaling plant.

MISSOURI.—St. Louis. The Wabash has let a contract to R. J. Blackburn, Inc., for a viaduct to carry Union and Lindell boulevards over the Wabash and the Rock Island's jointly used tracks at Forest Park. The contract also provides for a pedestrian bridge to carry Grand Drive over the depressed tracks. The total cost will be $131,600.

—Boonville. The M-K-T Lines has let a contract to the Kansas City Bridge Co. for the substructure for a bridge over the Missouri River at this point.

NEW JERSEY.—Dover. In connection with the electrification of its lines in northern New Jersey, the Lackawanna has let a contract to Deakman-Wells, Jersey City, for a tie station here.

NEW YORK.—New York City. The New York Central is receiving bids on foundations for a warehouse to be built at Sixty-second street and West End avenue.

OHIO.—Dayton. The Dayton & Union has let a contract to the Bates & Rogers Construction Co., Chicago, to elevate the tracks of the Pennsylvania between Bainbridge and Detroit streets.

—Akron. The Erie has let a contract to the Roberts & Schaefer Co. for a combined "N & W" type engine coaler, cinder handling and sand drying plant here.

OKLAHOMA.—Oklahoma City. The Rock Island has let a contract to the Tankersly Construction Co., Oklahoma City for a union passenger station to cost about $575,000.

—Tulsa. The Frisco has let a contract to the Manhattan Construction Co. for three concrete and steel platform shelters. Reid & Lowe have a contract to build the platforms.

PENNSYLVANIA.—Pittsburgh. The Baltimore & Ohio has applied for a federal permit to build a river and rail terminal on the right bank of the Monongahela River near here, for handling coal shipments.

TEXAS.—Amarillo. The Santa Fe has let a contract to the Union Bridge & Construction Co., Kansas City, for the substructure of a bridge across the South Canadian River about 20 miles north of this point. The bridge will cost about $1,000,000.

—Presidio. The Santa Fe has let a

contract to the List Construction Co., Kansas City, for a deck girder bridge over the Rio Grande River here.

VIRGINIA.—Alleghany. The Chesapeake & Ohio has let a contract to the Walton Construction Co., Roanoke, for a single-track tunnel parallel to the Alleghany tunnel to serve eastbound traffic. When completed the present double-track Alleghany tunnel will be converted into a single-track tunnel for westbound traffic. The cost will be about $1,660,000. Another contract has been let to the Bates & Rogers Construction Co., Chicago, for a single-track tunnel to parallel the single-track Lewis tunnel to provide a double track between Jerrys Run and East Alleghany, to cost about $1,100,000.

WEST VIRGINIA.—Deepwater. The Virginian Ry. has let a contract to the Virginia Bridge & Iron Co., Roanoke, for the superstructure of a bridge over the Kanawha River at this point. A contract for the substructure has been let to Boxley Bros. Co., Inc., Orange, Va.

—White Sulphur Springs. The Chesapeake & Ohio has let a contract to the Ward & Ward Co., Charleston, W. Va., for a passenger station, additional parking tracks and other improvements to cost about $170,000.

WISCONSIN.—Milwaukee. The Milwaukee has let a contract to the James Stewart Corpn., Chicago, for a 2,000,000-bu. addition to elevator E, to cost about $250,000.

Changes in Personnel

Executive & Operating

President Hoover announced, August 1, the resignation of **Thomas F. Woodlock** from the Interstate Commerce Commission and the appointment of **Charles Mahaffie,** for many years finance director of the commission, as his successor.

J. E. Taussig, president of the Wabash, has been elected president of the New Jersey, Indiana & Illinois, also succeeding **T. A. Hynes,** elected vice president and general manager with headquarters as before at South Bend, Ind. **R. J. Beilsmith,** assistant superintendent of telegraph of the Wabash has been appointed joint superintendent of that road and the Western Union Telegraph Co., with headquarters at Decatur, Ill., succeeding **J. P. Church,** deceased. The position of assistant superintendent of telegraph has been abolished.

Grant Hall, vice president of the Canadian Pacific has been elected president of the Algoma Eastern, also with headquarters at Montreal. **W. D. Neil,** assistant manager of western telegraph lines at Winnipeg, has been appointed assistant general manager with headquarters at Montreal. **W. M. Thompson,** superintendent of the Ontario division at Toronto, succeeds Mr. Neil. **W. S. Emery,** chief operator at Montreal, has been appointed superintendent of the eastern division at Montreal, succeeding **H. S. Ingram,** transferred to the Ontario division at Toronto.

The Nickel Plate Road announces the appointment of **C. W. Brecht** as assistant to the president, succeeding **R. M. Shepherd,** granted indefinite leave of absence to accept service with another company. Mr. Brecht will also continue his present duties as assistant to the vice president, operation and maintenance.

R. M. Shepherd has been elected vice chairman of the board of the Pittsburgh & Shawmutt with headquarters at Kittanning, Pa.

L. Podesta, superintendent of the Chicago Junction and the Chicago River & Indiana with headquarters at Union Stock Yards, Chicago, has been appointed general superintendent of the Indiana Harbor Belt with headquarters at Gibson, Ind., succeeding **F. G. Swafford,** appointed general superintendent of the Chicago Junction and the Chicago River & Indiana, with headquarters at Union Stock Yards, Chicago. **J. J. Kinsella,** assistant superintendent of the Chicago Junction and the Chicago River & Indiana, has been appointed superintendent of these roads succeeding Mr. Podesta. The position of assistant superintendent has been abolished.

R. E. Carter, assistant superintendent on the Frisco Lines at Neodesha, Kan., has been appointed acting superintendent of the northern division, with headquarters at Fort Scott, Kan., succeeding **W. H. Bevans,** granted leave of absence.

C. W. Watts, superintendent of freight claim prevention of the M-K-T Lines with headquarters at Denison, Tex., has been appointed division superintendent at Wichita Falls, Tex., succeeding **T. F. Gardner,** transferred to Parsons, Kan. Mr. Gardner replaces **J. H. Little,** transferred to Muskogee, Okla., succeeding **G. C. Byers,** who has been appointed general superintendent with headquarters at Denison.

Edward H. Friberg, assistant to the general superintendent of the Northern Pacific at Seattle, has been appointed assistant superintendent at Tacoma, succeeding **J. S. Dean,** deceased. The position of assistant to the general superintendent at Seattle has been abolished.

J. A. Frogner, division superintendent of the Great Northern at Havre, Mont., has been transferred to Great Falls, Mont. **T. F. Dixon,** division superintendent at Klamath Falls, Ore., succeeds Mr. Frogner. **C. A. Manthe** succeeds Mr. Dixon.

Financial & Legal

A. K. Atkinson, assistant to the vice president, accounting, of the Wabash and the Ann Arbor with headquarters at St. Louis, has been elected vice president, secretary and treasurer of these roads and secretary and treasurer of the New Jersey, Indiana & Illinois, with headquarters at New York. **W. D. Steele** has been appointed assistant secretary and assistant treasurer of the Wabash at New York. **G. E. Bramon,** general auditor of the Wabash with headquarters at St. Louis, has been appointed auditor of the New Jersey, Indiana & Illinois, also **G. E. Francisco,** local treasurer of the Wabash at St. Louis, has also been appointed assistant treasurer of the New Jersey, Indiana & Illinois.

Frank E. Robson, general counsel of the Michigan Central has been appointed assistant vice president, law, of the New York Central with jurisdiction over the Michigan Central, with headquarters as before at Detroit. **J. W. Dohany,** general attorney succeeds Mr. Robson. **J. J. Danhof, Jr.,** assistant general attorney at Detroit succeeds Mr. Dohany.

Herbert Fitzpatrick, vice president and general counsel of the Chesapeake & Ohio at Cleveland, has applied to the Interstate Commerce Commission for permission to hold the position of vice president, law and corporate relations, of the Missouri Pacific and affiliated companies.

H. W. Dorigan has been appointed assistant to the controller of the New Haven, succeeding **W. A. Gordon,** resigned.

H. C. Oswald, assistant secretary of

the Canadian Pacific with headquarters at Montreal, has been appointed secretary, also of the Algoma Eastern. **F. G. Millen,** assistant treasurer at Montreal, has been appointed treasurer, also of the Algoma Eastern.

Frank V. Whiting, general claims attorney of the New York Central with headquarters at New York, has been appointed general claims attorney, also of the Cleveland Union Terminals. **Oliver G. Browne** has been appointed assistant claims attorney with headquarters at New York. **Frank A. Hruska,** chief claim agent of the Pittsburgh & Lake Erie, with headquarters at Cleveland, has been appointed chief claim agent, also of the Cleveland Union Terminals.

The Norfolk & Western announces the appointment of **W. W. Cox** as general solicitor with headquarters at Roanoke, succeeding **J. H. Cheston,** formerly assistant general solicitor who resigned to go to the Pennsylvania system. **J. C. Cooke,** auditor of freight receipts, has been appointed general auditor with headquarters at Roanoke, Va., succeeding **J. M. Rodgers,** deceased. W. A. Gibbons, auditor of station receipts succeeds Mr. Cooke. **W. K. Gibson,** special traveling auditor, succeeds Mr. Gibbons.

D. I. Grant, Jr., of the law firm of Johnston, Grant, Dods & MacDonald, Toronto, has been appointed solicitor of the central region of the Canadian National at Toronto, succeeding **E. S. Fraser,** deceased.

Purchases & Stores

The office of the general storekeeper of the Boston & Maine has been transferred from Billerica shops to Boston. **W. E. Ruston,** assistant general storekeeper at North Billerica, Mass., has been appointed traveling storekeeper. The position of assistant general storekeeper has been abolished. **J. S. Hayes** has been appointed storekeeper at East Deerfield, Mass. **D. E. Conway** has been appointed storekeeper at Charlestown, Mass., succeeding **W. A. Butler.**

Walter Smith

The Erie announces these appointments in the purchasing department: **F. E. Driscoll,** purchasing agent; **F. W. Holt** and **T. E. Savage,** assistant purchasing agents. The position of manager of purchases has been abolished.

The title of **H. T. Shanks,** purchasing agent of the Louisville & Nashville has been changed to general purchasing agent of the Louisville & Nashville, with headquarters as before at Louisville, Ky.

F. G. Murray has been appointed storekeeper of the Louisiana & Arkansas Lines at Minden, La. The headquarters of **W. F. Wright,** purchasing agent, have been moved from Shreveport, La. to Minden.

Traffic

N. W. Hawks, vice president of the Boston & Maine announces the appointment of **John W. Rimmer** as freight traffic manager. Mr. Rimmer began his career as an office boy in the office of the Boston & Maine, 23 years ago, and five years later he was appointed secretary to the freight traffic manager. In 1915 he was advanced to traveling freight agent, and in 1917 was made assistant general freight agent. He was appointed assistant to the vice president in 1922, and has been assistant freight traffic manager in charge of research, import and export traffic since January 1, 1929. Mr. Rimmer has been closely associated with traffic problems in New England and in New England's relation to other parts of the country. His promotion re-establishes the post of freight traffic manager which has been vacant since the retirement of W. T. LaMoure in 1925.

C. S. Roberts, general freight agent of the Baltimore & Ohio at Baltimore has been appointed assistant freight traffic manager. **H. G. Settle,** assistant to the freight traffic manager succeeds Mr. Roberts. **R. J. Beggs,** assistant general freight agent succeeds Mr. Settle. All will have headquarters at Baltimore. The following changes have been made in the passenger traffic department: **G. F. Scheer,** assistant general passenger agent at Indianapolis, appointed assistant general passenger agent at St. Louis; **J. G. Van Norsdall,** assistant general passenger agent at St. Louis, appointed assistant general passenger agent at Indianapolis.

John W. Rimmer

The Erie R. R. announces the appointment of **L. B. Burford** as assistant freight traffic manager succeeding **H. C. Snyder,** deceased. Other appointments are: **W. H. Stadelman,** assistant freight traffic manager in charge of solicitation, lines east, covering New York City and off-line territory; **E. W. Vail,** general eastern freight agent at New York, succeeding Mr. Stadelman; **O. R. Davies,** assistant general freight agent at Cincinnati, succeeding Mr. Vail; **J. A. Ferguson,** division freight agent at Scranton, succeeding **W. J. Becker,** resigned; **M. S. Sweeney,** coal freight agent at Pittsburgh, succeeding Mr. Ferguson; **George R. Wheeler,** general freight agent in charge of solicitation, lines east, covering on-line territory.

The Canadian National announces the appointment of **R. J. S. Weatherston** as general freight and passenger agent of the Atlantic region with headquarters at Moncton, N. B. The position of general passenger agent occupied by **F. W. Robertson** is abolished. Mr. Robertson has resigned on account of ill health, after 44 years in the service of the Canadian National. **J. H. Corcoran** has been appointed district passenger agent at Moncton, with jurisdiction in New Brunswick, and the lines in the Atlantic region in Quebec, from Matapedia to Riviere du Loup and Edmundston to Monk, but not including the Gaspe Peninsula.

W. C. Maxwell, vice president in charge of traffic of the Wabash with headquarters at St Louis, has also been elected vice president, traffic, of the Ann Arbor.

A. T. McKean, assistant general freight agent of the Canadian Pacific,

with headquarters at Vancouver, B. C., has been appointed general freight agent. The position of assistant general freight agent has been abolished. Mr. McKean will supervise traffic in British Columbia, including the Esquimalt & Nanaimo Ry. and the British Columbia coast steamship service of the Canadian Pacific, and United States coast traffic.

The Missouri Pacific Transportation Co. announces the appointment of **J. D. Gowin** as freight traffic manager, with headquarters at Little Rock and at Houston.

J. F. Bon, general freight agent of the Western Pacific, has been appointed assistant freight traffic manager with headquarters as before at San Francisco, succeeding **R. D. Williams,** resigned.

Charles E. Case has been appointed industrial agent of the Chicago & North Western, with headquarters at Chicago, succeeding **George Bonnell,** retired.

Mechanical

H. W. Pinkerton, assistant electrical engineer of the Cleveland Union Terminals Co., has been appointed electrical and mechanical engineer of the Cleveland Union Terminal.

R. F. Thomas has been appointed traveling engineer of the Canadian Pacific, with headquarters at Montreal.

Civil

A. J. Loom, assistant general superintendent of timber preservation and tie treating plants of the Northern Pacific at Paradise, Mont., has been appointed general superintendent with headquarters at Brainerd, Minn., succeeding **Andrew Gibson,** retired. **George Hopkins,** assistant to the general superintendent succeeds Mr. Loom. **Levi Johnson,** assistant at Paradise, has been appointed superintendent of the Brainerd plant with headquarters at Brainerd.

Terance Scullin, superintendent of buildings and equipment, and **Dr. George D. Upson,** chief of the medical division of the accident department of the Cleveland Railway Co., were retired July 31, under the company's retirement and benefit plan. They have been succeeded respectively by **Thomas Nicholl** and **Dr. J. G. Jones. J. W. Kellison** has been appointed assistant superintendent of buildings.

L. B. Porter, assistant signal engineer of the eastern lines of the Milwaukee with headquarters at Milwaukee, has been appointed signal engineer succeeding **J. C. Mill,** retired. **A. F. Alexander,** signal supervisor at Minneapolis, succeeds Mr. Porter.

Obituary

William A. McGonagle, president of the Duluth, Missabe & Northern Ry., and acting head of the Duluth & Iron Range, died at his home in Duluth,

William A. McGonagle

August 2, aged 69. Mr. McGonagle was one of the pioneers of the Northwest. He was born at Conshohocken, Pa., March 28, 1861, and was graduated from the University of Pennsylvania in 1881. He began his career as a transitman in locating the Little Falls & Dakota branch of the Northern Pacific, and became assistant engineer of that road. He was resident engineer and superintendent of bridges and buildings from 1890 to 1901, and later became assistant chief engineer of the Duluth & Iron Range R. R. He was made assistant to the president in 1902, and from 1903 to 1909 was first vice president and general manager. He had been president of the Duluth, Missabe & Northern since 1909.

Byron O. Brill, general purchasing agent of the J. G. Brill Company, died unexpectedly in the Presbyterian Hospital, Philadelphia, July 21, aged 50. Mr. Brill was born at Williamsport, Pa., and was a graduate of the Spring Garden Institute of Philadelphia. His father, George Brill, was one of the four sons of J. G. Brill, the founder of the J. G. Brill Company. Byron Brill joined the company in 1898. With the exception of six years when he was with the General Electric Co., at Schenectady, he has been connected with the Brill Company. He was appointed general purchasing agent in May, 1922.

O. A. Kirkman, secretary, treasurer, and general manager of the High Point-Thomasville & Denton R. R., died at High Point, N. C., July 31, of injuries received in an automobile accident.

T. H. Lantry, general manager of the western lines of the Northern Pacific R. R., died unexpectedly at Seattle, August 2.

C. T. Lamb, president of the Rapid City, Black Hills & Western, died at Great Falls, Mont., July 25.

E. S. Newton, purchasing agent and store keeper of the Gulf, Colorado & Santa Fe, with headquarters at Cleburne, Tex., died unexpectedly July 23.

T. F. Steele, a traffic and executive officer of several subsidiaries of the Southern until he retired in 1921, died at New Orleans, July 13, aged 72.

Robert D. Pusey, general passenger agent of the Louisville & Nashville, with headquarters at Louisville, died July 26, aged 54.

John M. Callen, for many years a vice president and director of the Reading Iron Co., and the Thomas Iron Co., Reading, died July 2, aged 73.

E. W. Winter, former president of the Northern Pacific and the Brooklyn Rapid Transit, died in Fall River, Mass., June 28, aged 85.

Joseph P. Church, superintendent of telegraph of the Wabash with headquarters at Decatur, Ill., died June 17, aged 73. Mr. Church had been in the service of the Wabash and the Western Union for nearly 60 years, and had planned to retire July 1.

George Raymond Millican, vice president and general manager of the Evansville & Ohio Valley Ry. Co., died at Evansville, Ind., June 17, aged 53.

W. R. Collins, manager of purchases of the Erie with headquarters at New York, died at Newark, N. J., June 28, aged 67.

J. Coleman, retired general superintendent of the car department of the Canadian National at Toronto, died July 13, aged 70.

B. Wagner, assistant general freight agent of the New York Central, with headquarters at Chicago, died July 23.

Supply Trade Notes

C. B. Woodworth, manager of the western division of the **Vanadium Corporation of America,** has been appointed manager of the railroad division, with headquarters as before in the Straus Bldg., Chicago. Mr. Woodworth was graduated from the mechanical engi-

neering department of Purdue University in 1907. He was employed for nine years in various capacities in the mechanical departments of the Wabash and the Baltimore & Ohio. He served as a captain of engineers with the A. E. F., on railroad work in France, and after the war spent six years as a representative of the American Locomotive Co. in Argentina and Brazil. Mr. Woodworth has been manager of the western division of the Vanadium Corpn. since June, 1927.

Walter Smith, who has been appointed assistant manager of the railroad division of the Vanadium Corpn., formerly was special representative of sales and service work of the Pyle-National Co., Chicago. Mr. Smith is a graduate in mechanical engineering, Cornell University, 1909. He entered railway service with the Rock Island Lines and lated served the Baltimore & Ohio and the Chicago & North Western in various supervisory capacities. He became associated with the Pyle-National Co. in 1916. He left this company for service in the A. E. F., at the P. L. & M. Shops and Regimental Camp at Nevers, France. After the armistice he worked with the Inter-Allied Railroad Commission in Germany, and after his return to this country resumed service with the Pyle-National Co.

C. B. Woodworth

P. J. Gibbons, formerly assistant secretary and treasurer of the **Vanadium Corpn.** at New York, has been elected secretary and treasurer, succeeding Nils Falk, deceased.

N. G. Symonds, northwestern district manager of the **Westinghouse Electric & Manufacturing Co.,** has been appointed commercial vice president of the central district at Chicago, a newly created position. **C. E. Stephens,** northeastern district manager has been elected commercial vice president of the Atlantic division at New York. **W. R. Marshall,** Pacific Coast district manager has been elected commercial vice president of the Pacific division at San Francisco. **R. L. Herman,** transportation manager of the southwestern district has been appointed heavy traction representative with headquarters at New York. **Fred T. Whiting,** industrial manager, has been appointed assistant manager of the northwest district at Chicago.

The USL Battery Corpn., Niagara Falls, has appointed **G. Swallow,** railway signal equipment representative in the New England and eastern territory, with headquarters at Philadelphia.

J. F. Raps, general locomotive and boiler inspector of the **Illinois Central,** has resigned to become central manager of the **Okadee Company** and the **Viloco Railway Equipment Co.,** with headquarters at Chicago.

Stuart R. Ives, vice president and general manager of the **Lyle Culvert & Pipe Co.,** Minneapolis, has been appointed general manager of the **Armco Culvert Manufacturing Association,** with headquarters at Middletown, Ohio.

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CHICAGO, ILL.

JAS. B. DUFFY
Assist. Pass. Traffic Manager
LOS ANGELES, CALIF.

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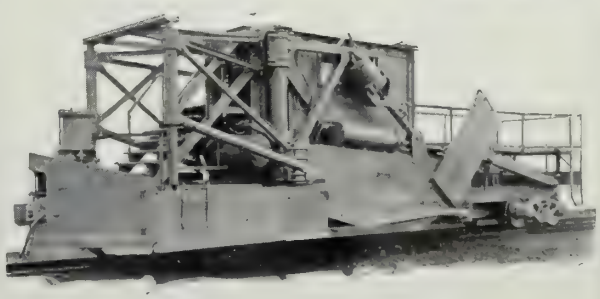

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Walter J. Riley, President

H. W. Protzeller has been appointed engineer maintenance equipment of **Fairmont Railway Motors, Inc.** Mr. Protzeller is a specialist in railway maintenance equipment and labor saving devices for handling railway roadbed problems. He has been granted 42 patents on such equipment in the past ten years. He was born in Allentown, Pa., in 1886, and was graduated from Lehigh University, electrical and mechanical engineering department. Mr. Protzeller spent several years with the General Electric Co. installing railway equipment. He organized and built the Minnesota Electric Railway and operated it as general manager for eight years. He was consulting engineer for the electric railways of Minnesota, Michigan and Illinois for two years, and development engineer of O. F. Jordan Co., East Chicago, Ind., for six years.

William R. Burrows, vice president of the **General Electric Co.,** has been appointed to succeed **Cummings C. Chesney** as chairman of the manufacturing committee. Mr. Chesney, who is retiring, has been connected with the General Electric and Stanley Companies for more than 42 years. **John T. Broderick,** secretary of the manufacturing committee, retired from active service, July 1, after 41 years' service.

H. W. Protzeller

The Fuller Lehigh Co., manufacturers of pulverized coal firing equipment and Bailey water cooled furnace walls, has opened a sales office in the Candler Bldg., Atlanta, in charge of **J. Mc. C. Hill.** The main offices and works are at Fullerton, Pa.

A. W. Clokey of the **American Arch Co.,** has resigned to become railroad sales representative of the **Joslyn Manufacturing & Supply Co.,** with headquarters at 120 South LaSalle street, Chicago.

J. L. Van Nort has been appointed sales engineer of the Boston office of the **Reliance Electric & Engineering Co.,** Cleveland.

Walter Blocher, representative of the **Central Alloy Steel Corpn.,** Massillon, Ohio, with headquarters at Indianapolis, has been appointed assistant district sales manager of the **Republic Steel Corpn.,** at Pittsburgh, succeeding **Arthur Vogt,** resigned to become district sales manager of the **Associated Alloy Steel Co.,** with headquarters at Cleveland.

The General Refractories Co., Philadelphia, has opened a district sales office in the Empire Bldg., Birmingham, Ala., in charge of **Walter S. Stapler.**

Thomas B. Baker has been appointed director of the traffic department of the **E. I. du Pont de Nemours & Co.,** succeeding **William A. Simonton,** retired. **F. S. Farrow** has been appointed traffic manager, succeeding Mr. Baker.

The Superheater Co. has moved its Chicago office from room 801 to room 1325 in the Peoples Gas Bldg., 122 South Michigan boulevard.

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Transportation

(Reg. U. S. Patent Office)

The National Monthly
of the Transportation Company

Vol. VII

No. 3

FEATURES *for September,* 1930

Locomotives of Tomorrow, *Harold A. Smith*

Executives, and Officials of the Mechanical Departments Write About Possibilities of Motive Power Development in Coming Years

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The News of the Month.

Meetings, and Things

SEVERAL important meetings will be held this month, but for most of us the yearly gatherings of the Traveling Engineers' Assn., at the Hotel Sherman, Chicago, September 23-26, will hold chief interest. Anything this organization does, especially at convention time, always is distinguished in one way or another, but this year an event likely to go into history is on the program.

September 24 has been selected for special consideration of one subject: Motive Power of Tomorrow, from the viewpoint of designer, builder, and owner. As reported in this magazine last month, several widely known gentlemen representing these three classifications have promised to express themselves. The list includes experts from the East, the Far West, from Canada, and Mexico. To contribute inspiration and, perhaps, to give additional interest to the party, a number of executives and mechanical officials, and one consulting engineer of more than national reputation, have written their views for this issue of *Transportation.* Read what they say in the leading article, and go to Chicago prepared to say what you think about this absorbing question.

The International Railroad Master Blacksmiths will meet at the Hotel Morrison, Chicago, Sept. 23-25, with an exhibit by the Supply Men's Assn. The International Railway General Foremen's Assn., will meet Sept. 16-19, at the Hotel Sherman, Chicago, and the National Safety Council at Montreal Sept. 29-Oct. 4. Roadmasters and Maintenance of Way Assn. meets at the Hotel Stevens, Chicago, Sept. 16-18, with an exhibit by the Track Supply Assn.

THE TRANSPORTATION PUBLISHING CO., INC.

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A. E. HOOVEN, *Vice President*

CHARLES DILLON, *Vice Pres. and M'ng. Editor*
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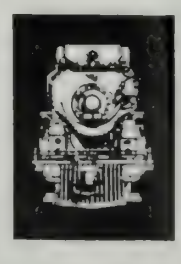


We Do Hope This Young Designer of the Future Doesn't Forget the Lively Competitor Now Making His Plans on Page 9.

Locomotives of Tomorrow

By

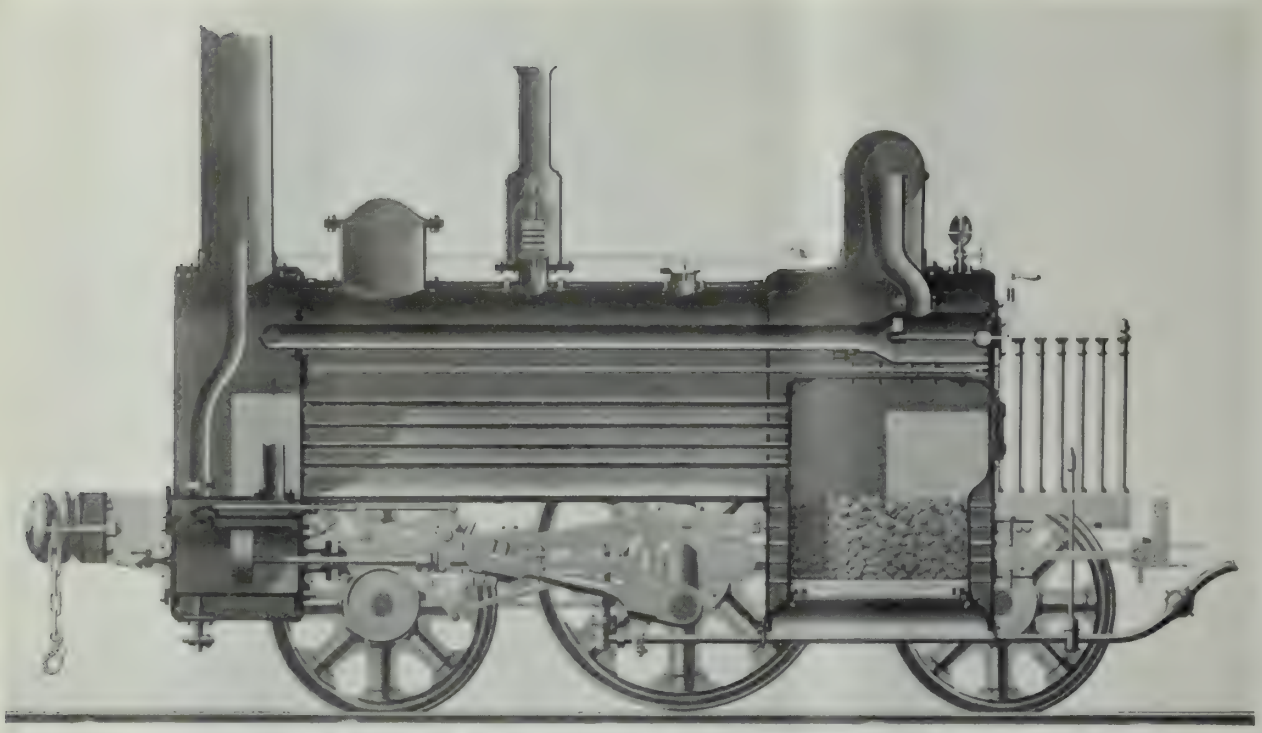
Harold A. Smith

IT SEEMS a long jump from the much-discussed Earl Carrol's Vulgarities of 1930 to locomotives, especially when we never have known an engine that had a sex-vibration, although usually referred to as feminine. However, in that production two comedians did touch lightly on the subject of steam. One asked the other about his occupation, and upon being told that he was a steam shovel manufacturer, replied: "Mister, you can't fool me. I know you can't carry steam in a shovel."

When this publication asked some of the railroad officials to tell us what they thought of the future of the locomotive Mr. Besler, chairman of the board of directors of the Central Railroad of New Jersey, wired us, "We must judge the future largely by the past."

That certainly is true. While laymen and comedians know something of steam, at least that it can't be carried in a shovel, and while engineers all over the world have made great progress in harnessing and developing steam, as evidenced by the picture of the little engine built in England in 1840, and the new types of high-pressure locomotives shown in this issue, we must concede that steam power still holds many potentialities that will be developed in the future.

September 24 has been set aside during the forthcoming convention of the Traveling Engineers Assn., at the Sherman Hotel in Chicago, to discuss the subject, "Motive Power of Tomorrow." This will be consid-



An English Locomotive of 1846 Reproduced From a Drawing in a French Periodical.

ered from the viewpoint of designer, builder and owner. These speakers have accepted invitations to take part in the discussion:

Designers, George L. Bourne, the Superheater Company; S. G. Down, Westinghouse Air Brake Co.; John E. Muhlfeld, Muhlfeld Engineering Corpn.; Silas Zwight, Northern Pacific Co.; Paul K. Kieffer, New York Central Railroad Co.

Builders, George H. Houston, Baldwin; William C. Dickerman, American; W. E. Woodard, Lima.

Users, Paul Shoup, Southern Pacific Co.; W. W. Atterbury, represented by T. W. Demarest, Pennsylvania Railroad; Sir Henry Thornton, Canadian National Railways, to be represented by an executive of his choosing; M. Cabrera, National Railways of Mexico. President R. H. Aishton, of the A.R.A., will open the discussion.

In presenting the following opinions of railroad executives on this subject it is not our intention to detract in any way from the value of this meeting and the papers to be presented, but to bring about greater interest, and place more emphasis on this important subject.

Our American railroads, their prosperity and their future are so completely bound to the future of the locomotive, that too much thought and attention can not be given the subject by railroad executives. The high character and ability of the speakers who are to appear on the program in Chicago, September 24, insure a large audience. Every executive who can be present should mark this as a red letter day on his calendar and try to be there. The October issue of *Transportation* will carry a digest of the new ideas developed at the meeting.

Probably the most interesting feature about the opinions of the executives and the superintendents of motive power is found in their diversity. As an Irish friend once said of a debate among a dozen men: "Not one has the same opinion." In the present case while no two of the writers have similar viewpoints the contributions do show that railroad men are doing some very lively thinking, a most satisfactory situation. When technically trained men *think* constructively the industry they serve is pretty likely to be benefited.

Steam locomotives, in the opinion of C. E. Spens, executive vice president, Chicago, Burlington & Quincy Railroad Co., will continue in the present role, as the principal motive power equipment of railroads.

"The locomotive of tomorrow," Mr. Spens believes, "will not exceed materially in size the locomotive of today, but the power output and efficiency of the locomotive will increase steadily. This will be accomplished, first, through refinement of present day designs and refinement of mechanical details, followed by operating locomotives at high pressures, equipping them with water tube fireboxes and compound cylinders, and eventually, perhaps, the turbine locomotive.

"Present day and future superpower locomotives, designed for main line service, will not be adaptable to branch line service, and the difference in requirements for the various classes of service probably will become more and more distinct, necessitating, for each class of service, locomotives specially designed for the work.

"The rapidity of advancement in design may shorten somewhat the life of the locomotive, but the increased daily service now exacted from a locomotive will reduce the years of its life, tending to equalize the life of the locomotive to the advancement in design.

"Electrification of railroads will not become general. Geographical location, and problems in congested metropolitan centers, and not inefficiency of the steam locomotive, are the principal factors inducing electrification.

"The present oil electric and Diesel locomotives are expensive and complicated mechanisms, which have the handicap of rapidly decreasing efficiency as speed is increased. Until

the high cost of production and the handicap of reduced tractive effort at higher speeds are overcome, the Diesel or oil electric locomotive will not be a competitor of the steam locomotive, except in cases where there are unusual conditions, for slow speed work, or light branch line service."

President W. R. Cole, of the Louisville & Nashville Railroad Co., says, "The Locomotive of Tomorrow" is an extremely interesting subject, particularly since the maximum attainable efficiency, power and speed of the railroad locomotive constitute such vital factors in the production of adequate and economical transportation service under modern standards of operation.

"But the future of locomotive design," says Mr. Cole, "is fraught with such unforeseen possibilities that any serious prophesy as to what might be accomplished becomes nothing more than a bold guess. Intensive research, experimentation, and the application of improved devices have produced such remarkable achievements in locomotive development during the past few years that the standard locomotive in operation 20 years ago is now virtually obsolete except for limited service. Many railroad companies have been forced in large measure to remake their roadways and reconstruct their bridges to obtain the full benefit of the modern super-locomotive.

"I think it quite probable that the present-day research will result in the production of further important developments in the design and efficiency of the modern locomotive. It seems scarcely probable, however, that such far-reaching accomplishments will be attained as have been witnessed in past years, because of sheer physical limitations, both in the locomotive itself and in the field of its effective operation. The ultimate size and capacity of rail motive power will be governed largely by the greatest length of the train that it will be practicable, from an operating standpoint, to handle in main line service, at reasonable speed and with adequate safety. The maximum length of such trains, in freight service, probably will not exceed 150 cars.

"It undoubtedly is true that the use of the electric locomotive will become more general where the source of electric energy and other operating factors may be considered favorable, but the continually increasing efficiency and economy of present-day super-locomotive operation probably will have the effect of deferring to a considerable extent the period when electrification of railroad properties will be undertaken on a large scale.

"With respect to limiting the life of the locomotive, I do not believe it would prove economical to retire the modern super-locomotive in less than 20 years, although there appears no reason to believe that it can not be satisfactorily operated for a period much longer than this, even though it might not be, in many respects, equal to the locomotive being built 20 years hence. In the meantime, branch line or secondary service will be operated with such existing power of fairly modern type as may be suitable and available. When such power may no longer be available, it is possible that the oil-electric locomotive will be acquired for branch line or secondary power. It is not believed that the oil-electric locomotive can be satisfactorily adapted for heavy tonnage trains."

George F. Hess, superintendent of motive power for the Wabash Railway, says that although the curve of engine size is flattening he does not believe the limit has been reached. "Larger engines," says Mr. Hess, "may be used in the future only for special service, such as divisions where heavy coal or ore traffic may be handled, and where it would be possible to handle long and heavy trains without delay to other traffic.

"Large engines built for main line service probably will not be adaptable to branch line service on account of the great difference in requirements. For quite a number of years branch line service will be taken care of by steam locomotives that have become obsolete on account of their small size in main line service. It is quite possible that gasoline truck trans-

A Story That Started in St. Louis

IN 1903 the St. Louis REPUBLIC, *in referring to a Baltimore & Ohio engine weighing 200,000 pounds, said: "The limit in size apparently has been reached in American locomotives. The gauge of railway track limits the ultimate weight and dimensions of railway engines. Increased power and efficiency can no longer be obtained by the simple process of building bigger locomotives".*

Ewing Galloway

Possibly This Young Competitor of the Future May Be Dreaming Day Dreams of Power It Won't Do To Overlook.

A Snap Shot of Three Limas on the Boston & Maine, Running 30 or 35 Miles An Hour When the Shutter Clicked. These Engines are 100 Feet Long and Weigh 337 Tons. Tractive Power With Booster 81,400 Lbs.

portation will take care of the branch line service in future years.

"It is, of course, necessary to classify power between main line road service and switch service, but it is doubtful whether it is necessary to build a special design of power for secondary or branch line service.

"Although changes in design, and conditions of transportation are very rapid nowdays, it would not be safe to predict any limit on the life of the locomotive. We can only look ahead as far as possible, and keep absolutely up to date in design of any new locomotive.

"The use of electric locomotives undoubtedly will increase, but only moderately so. This question will resolve itself into one of total economy of operation of electric locomotives as compared with steam locomotives, coupled with the conservation of natural resources.

"There will be an extended use of both the oil-electric and Diesel engines. Both of these represent a very large decrease in original fuel demanded, and, therefore, will have a decided bearing on conservation of oil and coal. However, the question of oil and coal reserves would enter into the extent to which coal burning locomotives will be replaced in the future by internal combustion engines using some form of oil for fuel."

J. M. Davis, president of the Delaware, Lackawanna & Western Railroad Co., expressing the composite opinion of himself and his associates, says he believes the tractive power of locomotives will increase progressively, but not at so high a ratio as in the past.

"There will be a progressive increase in the size of locomotives, but this increase will not be as great as it has been in the past 30 years," says Mr. Davis. "The economical operation of railroads practically demands that locomotives must be constructed with a view to utilization in secondary or branch line service after they have served the purpose for which originally they were constructed in main line service.

"It will be desirable to design power for at least two classes of service, main line and switching, to secure the maximum of efficiency.

"We are approaching a period when locomotives will be considered inadequate or become obsolete after having performed service for 15 years.

"Straight electric locomotives will come into more general use and operate economically, especially in congested areas.

"Oil electric locomotives will be increasingly developed and extensively used, especially in congested areas, particularly for industrial switching. The Diesel engine will be used extensively for industrial switching service, but not for main line service.

"The continued successful and economical operation of railroads will make it necessary progressively to speed up both freight and passenger movements. To accomplish this, improvements in roadways, such as the elimination of curves and grades, will have to be made. Roller bearings on all classes of equipment should come into more general use. Rust-proof alloyed steels which will permit reductions in the tare weights of cars, and automatically increase their carrying capacity, should also come into more general use.

"Looking ahead, the motive power of the future should show a decided trend toward steam turbine-electrics, fueled with powdered coal, or, possibly, with oil, excepting in congested areas. This type of locomotive will provide greater speed and increased power, compared with the locomotives of today, and the fuel cost should be relatively small."

Economy of operation and maintenance must be strong factors affecting the future development of locomotives, says H. L. Worman, superintendent of motive power for the St. Louis-San Francisco Railway Co.

"There must be less stand-by time, less time in the enginehouse at terminals and on the road," Mr. Worman says. "There will be no room on a busy road for slow freight trains. Heavy trains must move faster. Engines must spend less time in shops and require the minimum amount of renewal of parts.

"Longer runs will be more common; heavier trains will be handled, which will demand more intensive operation and the maximum use of every locomotive. This will require a greater study of steam distribution, water treatment, and lubrication, less friction losses and a more thorough and uniform burning of fuel.

"Maximum steam pressures for radial stayed boilers have apparently been reached unless through the use of alloy steels or other means of increasing the strength of materials higher pressures can be reached. The 'Brotan' or water tube type of boiler will be more generally used, and this may be followed by the turbine condensing type of locomotive.

"The present locomotive has a very low over-all efficiency. This will have to be increased materially in the fu-

ture. The locomotive will have to give the highest power output per unit of total weight on drivers or tractive effort. No doubt, ten years will be about the maximum age of the future locomotive due to intensive requirements and obsolescence on account of operating demands.

"Reduction in the weights of equipment, both freight and passenger, will have to be a development in the next ten to twenty years. The present locomotives are pulling too much dead weight. With reduced weight of equipment, within the next 20 years larger engines will scarcely be necessary.

"The electric locomotive will be almost necessary in the East and possible in the Middle West, especially some parts of the Middle West, in the next few years, where quick service is required and where, due to smoke restrictions, a steam locomotive must be cut off the train outside of city limits. The harnessing up of rivers throughout the country will be an inducement to develop the electric locomotive, as cheaper power will be one of the governing factors.

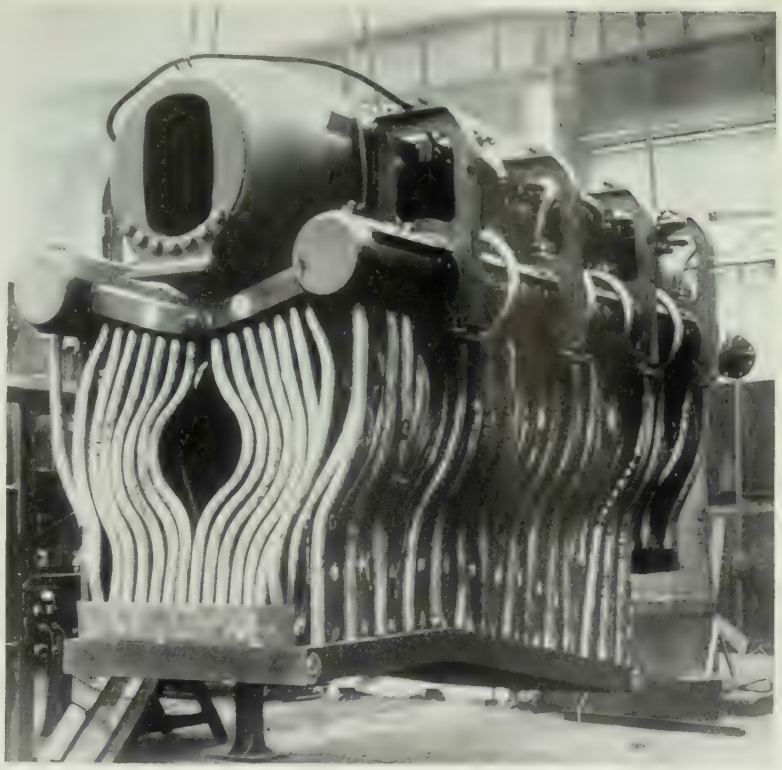
"The oil electric locomotive will have to be built cheaper and develop higher horsepower before it will be popular. The special talking point for the oil electric locomotive now is its high over-all efficiency, but this is restricted by the size and cost of the present electric locomotive. The same applies generally to the Diesel engine."

W. B. Storey, president of the Santa Fe System, says it is difficult to prophesy just what is going to occur in motive power design in the years to come. Improvement in the steam locomotive has been going on for many years and no doubt will continue in the future.

"The changes," Mr. Storey says, "probably will be more in the nature of efficiency than in size, although it is entirely possible that larger engines will be practicable as the bridges and road beds are improved.

"The electric locomotive and the oil electric locomotive undoubtedly will find a field, and radical improvements in their designs will be developed. The oil electric locomotive probably will be put into extensive branch line and switching service, but we expect the steam locomotive to be the major unit in motive power design for many years to come, so far as main line service is concerned."

"The future of the locomotive of whatever type is a function of the future of the railroads," says H. L. Ingersoll, assistant to the president, New York Central. "That, probably, always has been true, and from time to time the design of locomotives has been worked out according to the best knowledge and vision of those who had the matter in hand. Their product has done and is doing a very good job. To date it appears that no particular type has a monopoly; that there are conditions under which each is efficient. Perhaps it is best not to be bound to any partiality for types, but to make the best use of all the available means."



High Pressure Boiler Showing Water Tube Firebox on the London, Midland & Scottish Railway. Built by the North British Locomotive Co., Glasgow, and the Superheater Co., Ltd.

In writing the introduction to an article by J. E. Muhlfeld, consulting engineer of the Delaware & Hudson Railroad, in May, 1930, L. F. Loree, president of the company, said:

"About seven years ago the Delaware & Hudson Company started on a program looking toward the progressive development of a high pressure type of locomotive having an overall efficiency greatly exceeding that of the standard type. The plan of procedure called for a series of three locomotives to operate respectively at 350, 400 and 500 lb. per sq. in. boiler pressure. The last of these locomotives, the 'James Archbald,' D. & H. No. 1402, has just been completed and successfully tested at the Schenectady works of the American Locomotive Company. We feel safe in saying that with the present state of metallurgical art it approaches the ultimate that can be attained in locomotives of its class and type from the point of view of economy both in operation and maintenance.

"The locomotive 'James Archbald' represents, of necessity, a radical departure from the design of the standard type of locomotive. In order to operate at over double the usual boiler pressure and with a steam temperature of 800 deg. F., it was necessary to resort to hitherto untried constructions and materials. To pioneer into new fields of engineering design, requires the courage of conviction, and knowledge and ability.

"Judging from the results of the several years of operation of the first two of these locomotives, and the preliminary tests conducted on the 'James Archbald, this engineering accomplishment represents the successful completion of another big step in advancing the design of the steam locomotive and in fuel saving. There is no place in the design of power production and application, except the submarine, presenting so great limitations as the locomotive."

Fred W. Sargent, president of the Chicago & North Western Ry., says the history of steam railway transportation centers around the development of the steam locomotive. Every twenty years of the locomotive's history is marked with progress.

"Forty years ago we esteemed the

This is the Fury, the High Pressure Locomotive on the London, Midland & Scottish Ry. The Boiler and Tubes are Shown on Page 11.

locomotive as a remarkable machine," Mr. Sargent writes. "Twenty years later it was much more remarkable, and today it embodies the genius of many minds constantly studying to increase its efficiency.

"The modern locomotive reflects very much of the progress made in manufacturing steel; also in the adapting of all the progress in devising machinery to the railway service, and there probably is much more to follow.

"It would seem that we have reached the limit so far as size is concerned, but this cannot be said as to its power, for new inventions are concerned largely with the idea of producing more power without increasing the size of locomotives to unwieldy proportions. It is quite possible that practical methods of increasing the steam pressure will contribute largely to this result.

"The future may hold many improvements, the nature or value of which cannot be appraised in advance. The electric locomotive, the oil electric, the Diesel engine seem to be in their infancy, and their adaptability to the railway service may be demonstrated in a way which will surprise us all.

"These new forms of producing power have their attractive characteristics which must be recognized. At the same time steam power is unlike its competitors. Our difficulties lie more in producing steam power than in adapting it to railway transportation, hence the tendency to consider seriously those new forms of power which are not produced by coal.

"We have become so accustomed to the operation of the steam locomotive and to the progress it has made, that we are loath to acknowledge the possibility of its being outclassed or superseded by any other form of power.

"The steam locomotive is a friend that has served us loyally, and our appreciation of its service inclines us to feel that it will hold its own with its competitors for many years to come."

The steam locomotive will continue to provide transportation indefinitely, in the opinion of I. A. Seiders, superintendent of motive power and rolling equipment for the Reading Company. The average tractive power, he says, will continue to increase in reducing ratio.

"The development of the locomotive," says Mr. Seiders, "will continue more along the line of improved efficiency and economy than in size. The industry will continue to improve and develop in efficiency, economy and capacity, with improved methods and devices.

"Heavy locomotives will be required for main line and switching service and lighter ones for branch line service. Where cost, economy and other conditions warrant, electric operation will be used.

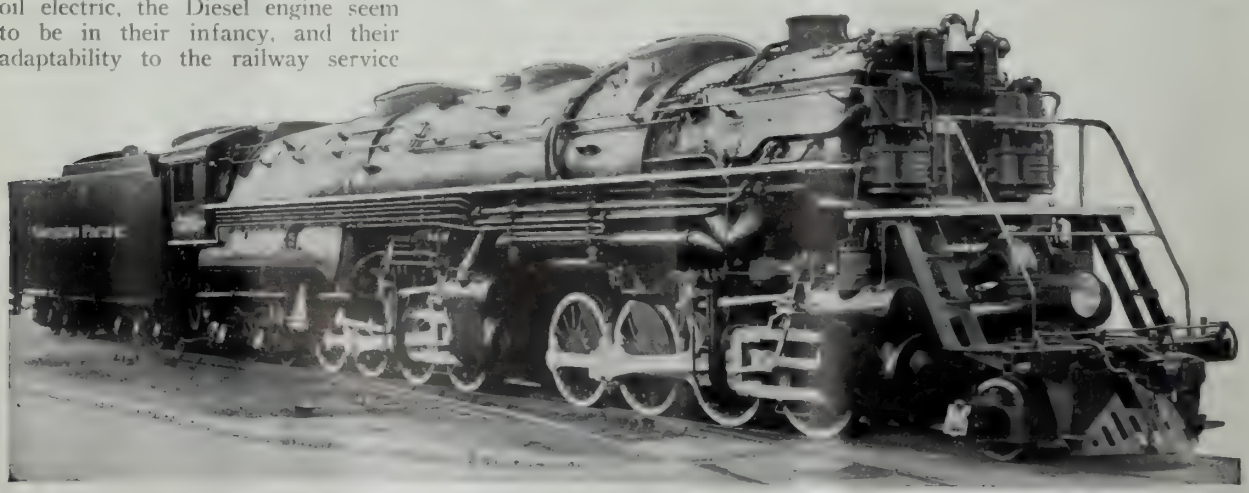
"Motor bus and truck service will supplement and in some cases possibly supersede older steam units.

"The life of the locomotive will depend on the conditions under which it operates with a possible average of 25 years.

"The electric locomotive will in the future come into more general use in larger numbers. The gas and oil electric locomotives will be further developed and used under conditions where it is the most suitable and economical unit of power."

V. Z. Caracristi of New York, a consulting engineer with offices at 230 Park avenue, says the St. Louis *Republic*, was in error in 1903 when it referred editorially to the Baltimore & Ohio Mallet locomotive as representing the limit in size of American locomotives at that time. A part of this editorial is reproduced elsewhere.

"This locomotive," says Mr. Caracristi, "was not designed to meet the limit in capacity, but merely to equal the tractive power output of two



Is This the Limit in Size and Weight? This is the Northern Pacific's Exhibit in the World's Largest Class. Weight 1,118,000 Lbs. Horsepower 6,000. Designed by Silas Zwight, General Mechanical Supt. Built by the American Locomotive Company.

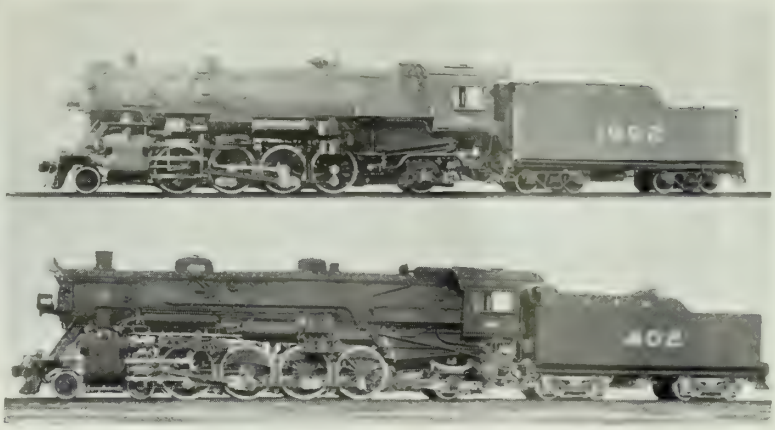
freight locomotives then in pusher service on the B. & O. The locomotive was designed by Simon Hoffman, now the head of the Superheater Company in Germany; C. J. Mellin, then consulting engineer for the American Locomotive Company, and the writer, supervising the design in detail of this power to have its construction meet the standards of American practice.

"In working up the preliminary plans and data, it was found at that time that the clearance and weight limitations then in existence were ample to permit the construction of a locomotive of this type having almost double the tractive power capacity of that incorporated in this engine.

"We have not yet reached the limit in tractive power effort, but modern transportation requirements are not fully met by tractive power alone, the tendency being overwhelmingly in the direction of sustained horsepower capacity. Future improvements in locomotive design will be directed largely toward the increase in sustained capacity rather than in tractive power, for the reason that in the United States there is an insignificant amount of trackage where the grade and transportation conditions are such as to require extremely heavy tractive effort.

"There are hundreds of locomotives in service in the United States today whose tractive power is much greater than that which can be fully utilized. This limitation is brought about by the inability to handle trains efficiently which contain more than 125 cars which, in turn, is the result of inadequate yard and passing facilities, and the difficulty of efficiently handling the braking of trains in excess of this length.

"Naturally there will be a substantial increase in the average tractive power of the fifty or more thousand



The 1892 Is One of the Louisville & Nashville's Modern Freight Engines. The 402 is a Mountain Type Locomotive. Both Are Baldwins.

locomotives in the United States, brought about by the replacement of equipment now in service with power of greater tractive capacity, but this increase will not be as pronounced as the increase in horsepower capacity output.

"The increase in horsepower capacity output will be the result of more careful consideration of the requirements of steam from main and auxiliary engines.

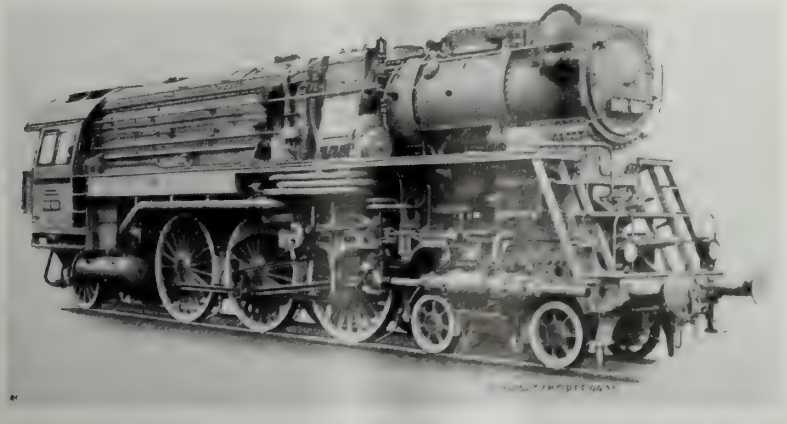
"The service and horsepower output of the individual units of power now in service will be materially increased by longer runs and more careful supervision of the utilization of the steam generated by the boiler through further education of the operating crews, and the providing of indicating and recording apparatus governing the steam distribution in the main and auxiliary equipment, as well as the further development of drafting apparatus more economical than those now in current use.

"It is quite natural that railroad publications should put the spotlight on special power of high tractive power capacity or of special high-pressure design, for the reason that a description of such power constitutes 'news,' and the result of such publicity tends to create the impression that in this direction alone are the railroads of this country making progress. On the other hand, much more progress is being made by the railroads in the United States through improvements of a character which escapes general publicity through refinements of detail and more careful supervision of day-to-day operation of power, with the improvements constantly being applied to existing power than is represented in the increase and efficiency brought about by the few samples of heavy power or power carrying special high boiler pressure.

"The tendency in railroad operation is to follow more closely central power station practice in which the load factor is given first importance, followed by steam economy, particularly as affected by auxiliary equipment.

"An analysis of the tractive power available will indicate that the growth in this direction is out of line with the growth of traffic. Eliminating efficiency, which, naturally, is of first importance, this country today is in the position where the motive power department is considerably ahead of the transportation end of the railroad business. The only way this condition can be entirely overcome is to pool the power among the railroads, for the reason that the seasonable demand is not uniform sectionally throughout the United States. There is always a condition where there is a surplus of power in one section in combination with a stringency in another.

"There always will be conditions on a small number of railroads or divisions thereof where extremely heavy power is and will continue to be justified, but this represents only



Side View of the Schwartzkopff High-Pressure Locomotive Now Being Tested in Germany.

First of Twenty Fast Freight Engines, 4-8-4 Pocono Type Built for the Lackawanna by the American Locomotive Company.

a small percentage of total power requirements in this country, and the overwhelming demand is in the direction of power having a great sustained horsepower capacity.

"There are conditions on a small number of railroads or divisions thereof where the use of electric locomotives is justified, but the percentage of locomotives or trackage under which this condition exists represents only a small percentage of the locomotives or trackage in the United States.

"It is extremely doubtful whether the oil electric or Diesel locomotive will ever constitute a major factor in the operation of American railroads. The conditions necessary for the economical use of this class of power are in most cases competitive with gas or Diesel trucks operating on highways, and the railroad will never be able to compete successfully with this class of service, because the fixed investment of equipment, trackage, power and cars is too great to compete with the competitive fixed costs of the trucks alone. Where such power is now used, it is more the result of forced conditions imposed upon the railroads rather than the deliberate substitution of such power in order to increase operating revenue.

"Based on the reluctance with which the railroads of this country as a whole accept and incorporate general improvements in locomotive design, it will be a great many years before any material change will be effected in the average power or efficiency of the locomotive. This condition is not the result of inertia on the part of railroad executives, but is dictated by financial inability to scrap and replace existing power which is necessary in order to reap in full the advantage of the improvements in modern design and detail.

"The greatest opportunity the railroad has before it today in new or reconstructed locomotive design is in the adoption of a more efficient method of burning coal. In order to avail itself of this opportunity it will of necessity follow central power station practice, and adopt methods of burning coal in suspension."

George H. Emerson, chief of motive power and equipment, Baltimore & Ohio Railroad, does not believe steam locomotives have reached the limit of capacity. "It is our opinion," says Mr. Emerson, "that considerably larger engines will be brought out in the future, than are now being built. The limiting factor in locomotive design in the past has always been the boiler capacity, and a conventional design staybolted boiler has just about reached, in our opinion, its maximum size and capacity.

"We believe the water tube boiler, of which designs are now in existence, suitable for firebox heating surfaces of from 1200 to 1500 sq. ft. direct heating surfaces, will enable locomotives to be built having tractive powers of about 150,000 lbs., which locomotives will not have axle loads in excess of engines now in daily operation.

"We believe it always will be necessary to classify the future power as is done at present, into main line service, secondary service, switch service, etc. In our opinion there are a great many branch lines in existence paralleled by publicly maintained highways, which branch lines in the future probably will be made unnecessary because of the bus and truck traffic which will be built up.

"We do not see any reason why in the interest of economy that it will be necessary to limit the life of a locomotive to any particular number of years. We have on the Baltimore & Ohio a number of locomotives of 20 years and over in age, which have been rebuilt and modernized in our own shops, and which are now operating on a water and coal rating equivalent to any of the so-called super locomotives now being built.

"We believe electric locomotives will continue to grow, especially in territories where there is great density of traffic, and where certain grade conditions will result in an operating efficiency which will justify the large capital expenditure involved.

"It is our opinion that the future of the Diesel engine and oil electric locomotive is very bright, provided the designers of Diesel locomotives can produce a dependable Diesel engine at not too excessive cost, which engine will produce a horsepower for approximately each 20 lbs. of weight of the Diesel engine."

Familiar Item Nowadays

The Georgia public service commission was asked August 10 to consider applications for suspension of trains Nos. 25 and 29 of the Southern railroad and trains No. 182 and 183 of the Atlantic Coast Line.

The Southern trains run between Atlanta and Hazlehurst, and the Coast Line trains between Jesup and Waycross.

The railroads seek the suspensions on grounds that the trains are producing no revenue and that they are losing money by their operations.

Opposition to the proposed suspension is expected from Macon and Waycross and other cities and towns served by the trains.

More Highway Competition

A franchise was granted the Mississippi Motor Transportation Company in August to operate 3,680 miles of bus lines over Mississippi highways, touching practically every section of the state. The application was opposed by labor organizations, and by railroads operating bus lines. The state railroad commission's vote on the franchise was 2 to 1.

Little Mikados for Narrow Gauge

Engines Built for a 36-inch Track in Central America, Have Standard Features of Class 1 Locomotives

By W. J. Powers

NARROW gauge locomotives, built for 36-inch track in Central America, and having practically all the latest type standard specialties, oil burners, with characteristics of design making them, indeed, little Mikados, are being delivered to the International Railways of Central America by the H. K. Porter Co., of Pittsburgh, Pa.

For the first time, so far as known in building this kind of locomotives, special efforts were made to embody the improvements made by Class 1 roads in designing power. The engines, in working order, weigh 235,000 pounds. They have a leading truck, four sets of driving wheels and a trailer truck, and are fitted with a tender having a capacity of 4,000 gallons of water and 2,000 gallons of fuel oil.

While essentially duplicates of other locomotives of this type in service on that railroad, they have been especially designed to meet the present standards of Class 1 railroads of the United States as to details, specifications and specialties. The axles and rods are made of Vanadium steel; brasses and wearing metal of special alloy; all sheets, other than boiler, of copper bearing steel, and all pins and bushings of hardened and ground steel. The frames and all castings are of cast steel. Only the cylinders are of cast iron, and they are bushed with special alloy iron.

The engines are fitted with such items as a pneumatic bell ringer; special type of buffer connection between engine and tender; grease lubrication throughout; power reverse gear; special staybolt iron; special valves and fittings; outside Timken roller bearings for leading truck; and electric headlight and lighting.

The engines are designed for 180 lbs. pressure, equipped with the latest type of superheater, and fitted with front-end throttle. The valve gears are of standard Walschaert type and equipped with power reverse gear for ease and accuracy of operation. The engines are capable of exerting a drawbar pull of 26,500 lbs., with 175 lbs. boiler pressure, and the factor of adhesion has been increased from the existing standard of 3.9 to 4.15.

The locomotives will be erected at Barrios, the railroad port of entry. They are required to negotiate a grade of 3½ per cent approximately 70 miles long in combination with a great amount of curvature. While the power is not largely in excess of the engines now in service, the in-

Here Is a Narrow Gauge Locomotive Built for the International Railways of Central America, Embodying for the First Time, It Is Believed, the Most Modern Improvements in Design Characteristic of Class 1 Power, Described Here in Detail.

A Group of Katy Passenger Officials, Just as They Were 26 Years Ago, Derbies, Short Overcoats, and Soup-Strainers. Look at the Trace-Chain on Brother Crush!

creased weight on the driving wheels provides a better factor of adhesion so essential for heavy grade service. The importance of this can be better understood when it is considered that only one or two railroads in the United States have grades equal to that to be negotiated by this power.

The weight of the new locomotives is very close to the limit established by the weight of rail in use on this railroad. The care in design and the specialties provided will result in substantial increase in operating efficiency as to fuel and maintenance expense. The boiler capacity is generous, and the provision for burning fuel oil is in line with the best established practice.

The International Railways of Central America extend from the Pacific Ocean, crossing the mountainous backbone of Central America, and reaching its highest elevation at Guatemala City. The company recently has completed a connection, giving it a through service from Porto Barrios on the Atlantic Ocean in Guatemala, to Mirambo, port of entry on the Pacific Ocean in Salvador, the Salvador connection being made at Zacapa in Guatemala. The ports of entry touched in Guatemala on the Pacific side are San Jose, Chemperico, and Ocos, which is close to the Mexican frontier.

The total tonnage handled by the International Railways of Central America in 1929 was close to 1,000,000 tons. Of this amount approximately 200,000 tons was import freight, and about 250,000 tons export freight, the balance being made up of local freight. The export tonnage consisted principally of bananas and coffee. This railroad serves almost exclusively the railroad requirements of Guatemala and Salvador. It is served by a large number of individually owned plantation railroads in the banana district, both on the Atlantic and Pacific sides, and enjoys a lucrative passenger business.

Credit for the design of the new locomotives is given to Matthew Turton, mechanical superintendent of the International Railways of Central America, and V. Z. Caracristi, consulting engineer, of 230 Park ave., New York City.

The Things They Wore in 1904

Twenty-six years bring many changes to humankind, not the least of which is the change in clothing styles. There was a meeting of Katy passenger officials in 1904 at San Antonio, and of course they had a group picture taken. One or two outsiders horned in, as often happens, or they were taken in to improve the picture.

Note the moustaches and the hard hats, not to mention the short-tailed overcoats. The gentleman at the right with the log-chain swung across his midships is W. G. Crush, now passenger traffic manager, then general passenger and ticket agent at Dallas.

Unhappily these 26 years have brought more serious changes than in wearing apparel. Many of the good fellows in this group have finished their pilgrimage and passed on.

Safety Congress Sept. 29

The most important general meetings of the year to consider the safety problems of the transportation industries of the country, will be held in Pittsburgh September 29 to October 3, as a part of the nineteenth yearly safety congress and exposition.

More than 100 railroad companies and systems which employ more than 1,000,000 workers and which operate most of the track miles in the United States, are cooperating through the steam railroad section of the National Safety Council to prevent accidents. This cooperative safety work has had almost spectacular success. For the past seven years the steam railroad section has been sponsoring a national safety contest. During this period the average casualty rate for all employes of important American railroads has been reduced 55 per cent. Several large railway systems have been able to reduce their accidents almost to nothing, and several small railway systems have made records of not a single lost-time accident during an entire year.

The steam railroad section program will include five half-day sessions and one luncheon session. At the first session, Tuesday morning, George Lovering of the Interstate Commerce Commission will talk on "Governmental Investigation of Fatal Railway Accidents." Such practical safety problems as the following will be discussed: Grade Crossing Accidents and Their Elimination; Education, a Factor in Accident Prevention; Accident Prevention and the Stores Department; Safety for Bridge and Building Employes; Hazards of Modern Power Maintenance-of-Way Equipment; Reduction of Accident to Employes from Cars and Locomotives; Accidents When Coupling and Uncoupling Cars and Locomotives; Head and Eye Protection for Welders; Shop Burns and Falls; Accident Hazards of Linemen and Signalmen.

Through the electric railway section of the National Safety Council, about 170 railway and street car companies which employ about 270,000 workers are cooperating in accident prevention work. Three of these companies operated in 1929 without a single accident, and the entire group reduced the accidents by nearly 20 per cent.

The electric railway section will have three one-half day program sessions and an additional joint meeting with the public utilities, street and highway traffic, and delivery taxicab and bus sections. There will also be a joint luncheon with the public utilities section.

One of the feature addresses of the program will be by Charles Gordon, managing director of the American Electric Railway Association, on "Improved Public Relations as Result of Safe Operations." Other important topics will concern surface line accidents, street and highway accidents, and car equipment and its relation to accidents.

Fear of the future is worse than one's present fortune.—*Quintilian.*

The Master Car Builders Were Busy at Detroit

By Harry L. Spooner

A Part of the Exhibit of the Railway Supply Men's Assn. in the Master Car Builders' Convention at Detroit, August 26.

IF THE VOTERS, looking for senatorial timber, are really desirous of choosing men who will take their duties seriously enough to accomplish something, they could do no better than to select men from the Master Car Builders and Supervisors Association. In its second yearly convention this association did more in its three-day convention, closing August 28, at the Book-Cadillac Hotel, Detroit, than the United States senate did in its entire recent session including the investigations into this and that. The application this fine body of men gave to the business in hand, the earnest endeavor to cover thoroughly every subject on the meaty program, and the celerity and business-like procedure which marked every session would prove an excellent example to our federal law makers.

The program, consisting of addresses, individual papers, reports, and discussions, ran the entire gamut of subjects involved in the building and maintaining of cars for freight and passenger traffic. A considerable part of the time was given to the discussions dealing with service, repairs, loading rules, selection of cars for commodity loading, safety first, air brakes, draft gears, elimination of oil and grease from house cars, damages done to car floors by automobile shippers, ventilation of passenger cars. In fact, the convention proved to be a great educational movement, a most unusual and profitable short course in everything pertaining to the duties of the builder and maintainer of traffic carriers. From the moment that president C. J. Wymer let the gavel fall at 10 a.m. on Tuesday until adjournment at 4 p.m. on Thursday, every member was present or accounted for.

The most important event was the changing of the name of the association to "The Railway Car Department Officers' Association." Another important item was the presentation of $25 in gold as a prize for getting the largest number of new members. This prize went to C. J. Nelson, chief interchange inspector of all lines at Chicago who had obtained 170 new members in a total of 717. Mr. Nelson, in turn, presented the treasure to Edward Feldmeir of the Chicago Interchange Bureau who had reported 58 members. F. A. Starr, chairman of the membership committee, said the membership now numbers 1838.

The election and promotion of officers for the ensuing year resulted as follows: president, K. F. Nystrom, Milwaukee; first vice president, F. A. Starr, Fort Thomas, Ky.; second vice president, E. J. Robertson, Minneapolis; third vice president, C. J. Nelson, Chicago; fourth vice president, A. J. Kreuger, Cleveland.

The retiring president, C. J. Wymer, became chairman of the board of directors. The new directors chosen were: J. P. Egan, New Haven, Conn.; G. D. Minten, Portsmouth, Ohio; E. S. Smith, St. Augustine, Fla.; and T. J. O'Donnell, Buffalo.

The layout of the convention was perfect. The business sessions were all held in the Crystal Ballroom. The exhibits of 50 or more firms in the Railway Supply Men's Association were in the Italian Garden, connected with the convention room, through which all had to pass to get to the convention floor. The exhibits were an important part of the educational features of the convention. Indeed the supply men made valuable contributions to the success of both business and entertainment features. Many of the displays, in fact all of those adaptable to such power, were operated by electricity. The quality of the displays was of a high order and they occasioned a great deal of interest.

The supply men elected officers as follows: president, Charles F. Weil, American Brake Shoe & Foundry

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To the trucks that lead the 20th Centu
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HERE stand those famous trains—the Centuries—ready for their 930 mile run across the country under steam operation.

Together with the Twentieth Century, the Commodore Vanderbilt, Lake Shore Limited, Wolverine, North Shore Limited, Empire State Express, Southwestern Limited and the other de luxe trains of the New York Central Lines comprise an unsurpassed group of fast trains. In them, modern railroading reaches a high peak of attainment.

The last word in luxurious equipment, these famous trains are hauled by the equally famous "Hudson Type" (4-6-4) locomotives, specifically designed for this exacting service.

Day after day this magnifice of trains clicks in and out of t on time to the dot.

All credit to the superb organiz the splendid equipment that n possible.

Naturally, on locomotives that ru high speeds for 600 miles without u every item of equipment must be de for the passenger confidently exp safe transportation and an "on-ti

Heretofore engine trucks ha troublesome source of delay. They s ously difficult to lubricate. Servic and even the most careful attentio guarantee freedom from bearing tr

Four years ago SKF applied or York Central the first successfu bearing for engine truck servic country.

Today this first truck has mad

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Courtesy of New York Central Lines

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ng the initial installation, more ere equipped. As a result of this nce, SKF journal bearings have lied in increasing numbers to the ucks of those locomotives whose bility is hauling the New York finest trains.

isplay of confidence in SKF is alone on the performance of SKF out on the experience and engineer-ent of the SKF organization who rs have pioneered in the application ction bearings to railroad equipment.

bearing dependability is essential ads of the country have learned to KF.

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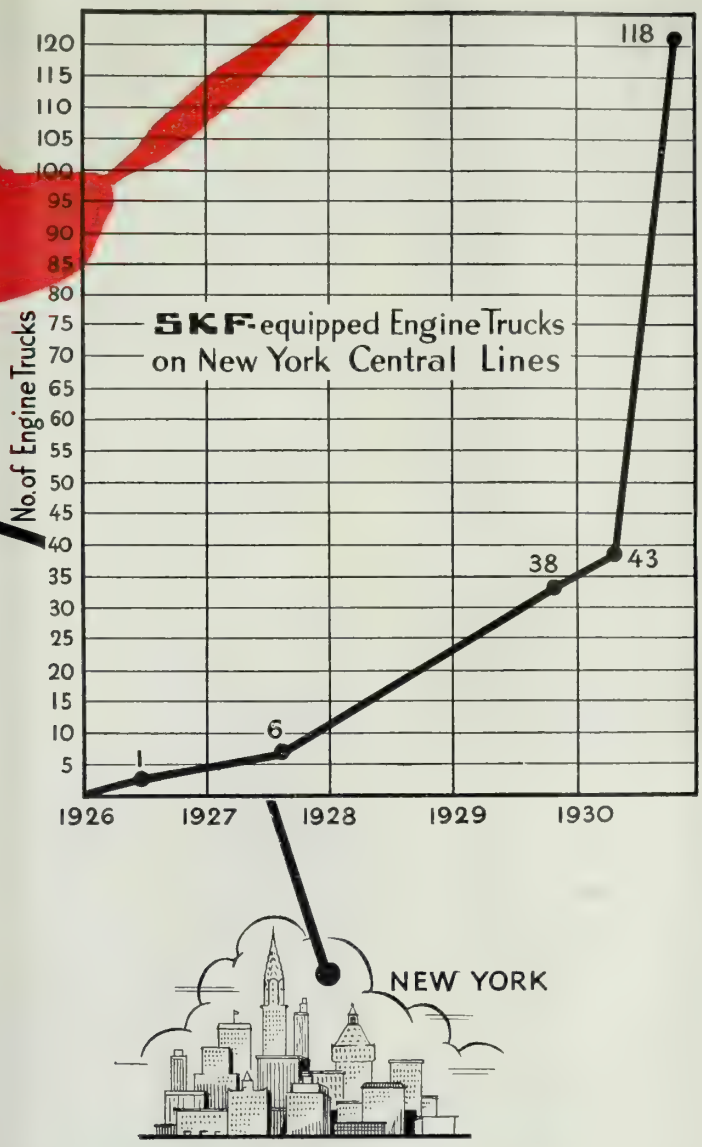
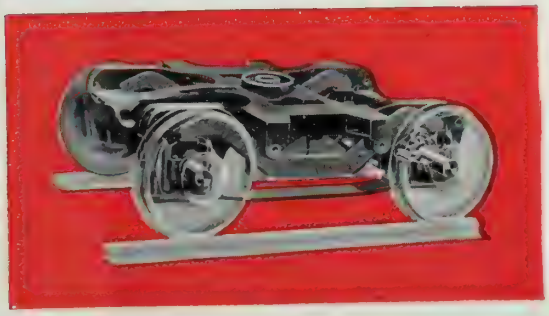




Engine truck service requires a bearing of large capacity. With its two rows of rollers and self-alignment SKF meets this requirement. The split box makes the SKF bearing accessible for inspection if it should be necessary. The bearing carries both thrust and radial load. No hub liners are used. Lateral motion of the axles is constant.

A. Sternberg
Secretary-Treasurer

Co., Chicago; first vice president, E. H. Hall, Milar Clinch & Co., St. Louis; second vice president, K. M. Hamilton, the Bettendorf Co., Chicago; third vice president, Karl Milar, Milar Clinch & Co., Chicago; fourth vice president, E. H. Weaver, Westinghouse Air Brake Co., Chicago; secretary-treasurer, Bradley S. Johnson, W. H. Miner, Inc., Chicago. J. T. Cralley, Union Metal Products Co., Chicago, the retiring president, becomes chairman of the board of directors. Other new directors are W. C. Sanders, Timken Roller Bearing Co., Canton, Ohio; E. H. Mattingly, Standard Auto-Tite Joints Co., Chicago; E. E. Thulin, the Duff-Norton Mfg. Co., Chicago, and A. G. Dohm, Camel Co., Chicago.

The educational character of the convention had its keynote in the opening address of President C. J. Wymer who spoke of the importance of *thinking* among the subordinates in the car department. "Show me," he said, "a supervisor who is not a machine, but a thinker about his work, and I will show you a foreman who is constantly growing in efficiency, who will instill thinking in the men he supervises. When you get the foremen and the workmen interested and thinking along right lines, a high degree of efficiency must be the final result. It is surprising how much a thinking workman can contribute to the success of his foreman if the opportunity is given him to make the contribution.

"Our most important duty, as an association, is to educate ourselves and our supervisors in a better understanding of our responsibilities. This can best be done through exchange of ideas and discussion of the problems we have in actual operations. From these examples in actual experience there should emanate many suggestions which would be valuable in forming standard and practical regulations.

"To the thinking supervisor, I say there is room at the top. This was well put by Ella Wheeler Wilcox, when she said 'Life is much like a crowded street car. As you enter you will find standing passengers

The Book-Cadillac Hotel
Detroit

crowding the aisle, but crowd by, even if you receive disapproving glances as you do so, and you will always find a seat in front.' To the ambitious foreman I would advise, 'Be a student of your work, press forward, and do not let the crowd of satisfied supervisors in the aisle who are ready to give you unfriendly comment, deter you in your purpose, and you will find a better place awaiting you when you have sufficiently increased your journey in qualifications. The better your knowledge of your work, and all work in any way associated with it, the more easily and efficiently your duties can be performed, and the greater support you will be to your supervisor, the greater your value to the company you serve."

The principal address, by T. C. Powell, president of the Chicago and Eastern Illinois Railroad, was read by his secretary, W. M. Templeton, because of Mr. Powell's unavoidable absence caused by the illness of Mrs. Powell. The address was entitled, "Stumbling Blocks." In the list of stumbling blocks, Mr. Powell included competing agencies now taking revenue from railroads, and suggested that possibly the car departments had, to some extent, contributed to the rapid growth of this competition.

Discussing some of the faults which have become stumbling blocks in the way of successful traffic solicitation, he mentioned poor ventilation and temperature control in passenger cars; the absence of any standard size in box cars, stock cars, and refrigerator cars; the faulty construction of coal cars, allowing sand, fine coal, to leak out; lack of complete insulation in refrigerator cars; defective draft gears, the effect of which produces "rough handling"; leaky roofs; car doors badly designed, resulting in danger to contents of car in transit, and sharp

C. J. Wymer
Retiring President

corners among the inside members which might easily be rounded.

"Every item of car construction," said Mr. Powell, "which interferes with the easy loading or unloading of freight, the safety of the freight itself, or, in the case of passenger cars, with the comfort of passengers, is a 'stumbling block' in the way of a traffic solicitor in his approach to the public."

Mr. Powell sent with his address an imposing exhibit of the many sizes of cars of every kind, a condition he deplored vigorously. Car departments, he said, must take a part in bringing about something more nearly approaching standardization on all roads. "You have the knowledge," said he. "You have the skill, and I know that you appreciate that mere ordinary conditions will not be sufficiently emphatic to be successful. With confidence, therefore, I leave to the members of this great organization the task of removing all the 'stumbling blocks' within their control from the path of the traffic department.

"I have tried to point out, I hope without too much of a critical spirit, some of the great responsibilities that rest on your shoulders. There are many others. Every railroad is interested in preventing and removing 'stumbling blocks' in the way of getting traffic, not necessarily in the case of one railroad against another, but fundamentally in the case of all railroads against all other forms of transportation.

"My own opinion is that in the next five years there will be, by reason of your association efforts, a very substantial improvement in the passenger and freight train cars of this country. I am, therefore, looking to you to win back to the steam and electric railroads a substantial part of the traffic that otherwise would seek competing channels."

John C. Scheidel, district superintendent of car repairs of the North American Car Corp., Tulsa, Okla., read an especially good paper on "How Can the Mechanical Departments of the Railroads Improve the Service Rendered to Private Line Cars?" The paper created a great deal of discussion, Mr. Scheidel answering numerous questions asked him from the floor.

F. A. Starr
First Vice President

K. F. Nystrom
Elected President

"Systematic Repairs to Freight Cars," was the subject of another paper prepared by W. E. Dunham, superintendent car department, C. & N. W. Railway, and read by L. R. Wink. Mr. Dunham explained the necessity for having a definite program of car repair, with a schedule which outlines the extent to which cars in the various classes are to be maintained as they go over the repair tracks.

Bradley S. Johnson
Secy.-Treasr. Supply Men's Association

"The older and more or less obsolete class of freight equipment," said Mr. Dunham, "which is in process of retirement should be maintained in service at the lowest possible cost. This class of car generally is assigned to the handling of rough freight. The repairs should be confined to draft gear, running gear, and safety appliances, and these parts should be properly maintained until the car is retired.

"A satisfactory plan for the handling of repairs to the later and more modern class of freight equipment is systematically to shop the cars for general reconditioning at stated intervals by groups according to date built and their general physical condition.

"On our railroad the schedule covers work to be performed on the older cars now in process of retirement, cars of the more modern types as they go over the repair tracks after having been overhauled and the general reconditioning of cars requiring this class of repairs. Such scheduling we feel is necessary for systematic and economical maintenance as it insures against extensive and unwarranted repairs to the older cars and assures properly maintaining the various groups of cars for the service for which they are intended."

The reports of the several committees were thoroughly discussed.

Three of these, those on causes of wheel failures, on the billing section of A. R. A. rules, and on the A. R. A. loading rules were in printed form. The latter was ably illustrated in motion pictures presented by E. Dahill, chief engineer of the A. R. A. freight container bureau.

The reports on formulating a standard method of selecting cars for commodity loading; on elimination of damage to automobile car floors by automobile shippers, and on the elimination of oil and grease from house cars also induced much discussion. The latter subject was the most warmly debated of any subject on the program. All existing methods used on various railroads were discussed, some championing one method and some another, but all harking back to misuse of the car. A. J. Kreuger, master car builder of the Nickel Plate at Cleveland, made a very helpful suggestion and one that will be investigated by other car builders, in stating that his road has an arrangement with a private concern at Toledo which steam cleans the cars very effectively of oil and grease at a very economical figure, more effectively and cheaply than the railroad can do the work itself.

While the meeting was held primarily for business, and this occupied the daylight hours for three days, entertainment was not forgotten. Many of the 154 railroad men and the 74 supply men present had brought their wives and daughters along, which added considerably to the pleasure of the convention. Detroit put on its best weather, temperate days and cool nights, copied from Los Angeles doubtless, so that neither business nor pleasure was interfered with.

The first evening was given over to a dance and entertainment in the grand ballroom of the Book-Cadillac which provided an excellent orchestra. Among other excellent entertainment specialties the high point of the first evening was the Supply Men's Band, made up of twelve members dressed in various comical costumes and playing various instruments (or pretending to play them) with the regular orchestra. This number, as well as all the rest of the evening's program, was planned by the 13 supply men making up the entertainment committee, of which J. W. Fogg, of MacLean-Fogg Lock Nut Co., was chairman.

Wednesday evening a twilight boat ride on the excursion steamer Sainte Claire provided delightful recreation. For two and a half hours the boat glided up and down Lake Saint Clair while the convention members and guests, augmented by a large number of local railroad men, their wives and sweethearts, danced to the music of the boat's orchestra, and between numbers were entertained by Corinne Muer's entertainers. These entertainers were selected from the best acts from the leading playhouses of the city. This part of the program was entirely a Detroit undertaking credited to W. M. Allison, general

J. W. Fogg
Chm. Entertainment Committee

car inspector of the D. T. & I., chairman of the local committee on arrangements. Mr. Allison did everything possible to promote the interests of the convention.

Happy Days Returning

After taking an involuntary vacation of two weeks, 2,000 men returned to work in the repair shops of the New York Central Railroad at West Albany.

For the present they will work 40 hours a week, with prospects of increased activity later in the month. The layoff, which occurred also at the Avis and East Buffalo shops July 19, was reported due to the fact that repair work on locomotives and cars had caught up with the operating schedule.

Approximately 1,000 employes have been recalled to work by the St. Louis-San Francisco Railway Co. Two locomotive and coach shops which were closed temporarily at Springfield, Mo., are being opened to recondition and repair rolling stocks.

The federation of transports and communications of Mexico recommends reduction of salaries of railroad executives rather than cut in labor payroll as step in rehabilitation of Mexican National Railways.

Ten Million Women Work Outside the Homes

This country's population of more than 122,000,000 is mainly supported, as far as "breadwinning labor" is concerned, by the efforts of about 47,000,000 people working about three-quarters of the time, the director of the census, Dr. William M. Steuart, said in an address Aug. 31. Gainful workers, he added, do not work more than 275 days a year.

Three forms of activity give employment to about one-third of the men of the country, Mr. Steuart said. Agriculture, he stated, employs about 11,000,000 males, and the manufacturing and mechanical industries employ about 12,000,000. Transportation, trade, and domestic and personal service, he added, are the other large employers.

More women than ever before—about 10,000,000—are engaged in some sort of gainful occupation, while the home-makers bring the total number of workers among women to practically the same proportion as the number of workers among men.

About one-quarter of the total working population—men and women—is engaged in some form of agriculture: one-third is active in manufacturing; 3 per cent is employed in mining, 7 per cent is engaged in transportation, 10 per cent is engaged in trade, 7 to 8 per cent is employed as clerks, stenographers, agents, bookkeepers and messenger boys; about 5 per cent is active in professional service, and about 8 per cent is in domestic and personal service.

Education alone can conduct us to that enjoyment which is, at once, best in quality and infinite in quantity.—*Mann.*

Life is full of problems. He is most successful in overcoming—who faces his difficulties fearlessly and does not permit himself to turn aside until he has met his issues and mastered them.

The Rubber Heels of Transportation

Duryea Underframes on Baltimore & Ohio Cars Reduce Shock to Lading

By J. J. Tatum

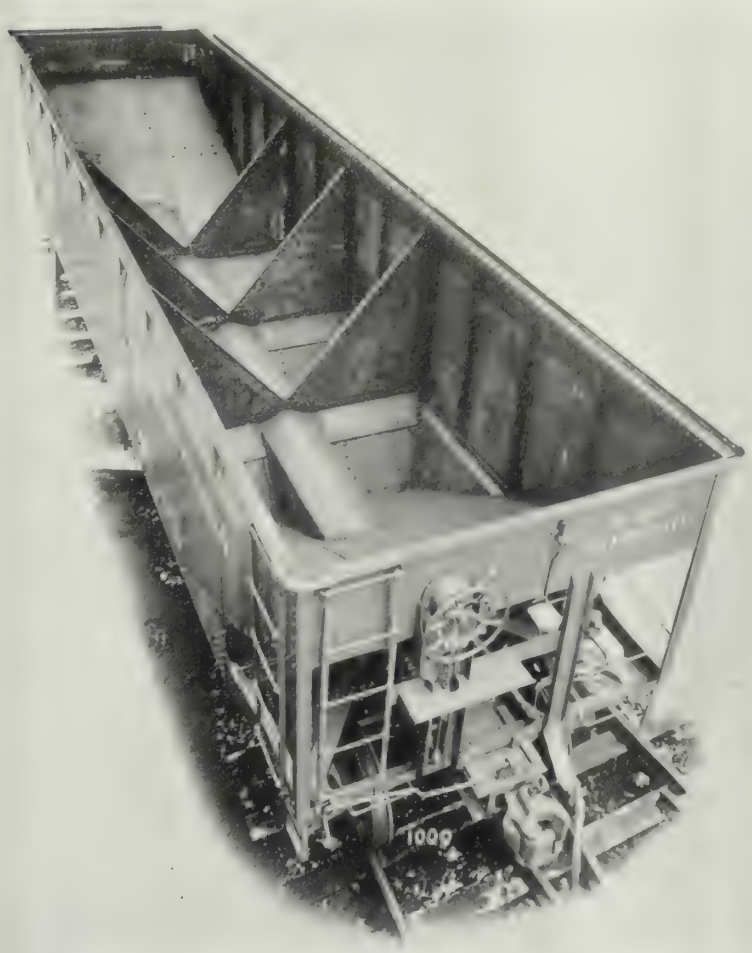
Gen. Supt. Car Dept. B. & O.

IF YOU HAVE worn rubber heels for many years, and then, some day, put on a pair of shoes not so equipped, you learn what it means to take the shocks out of life. Some such experience turned the minds of car builders to thoughts of ways in which it might be possible to improve service to shippers, and cut down operating costs and damage claims on railroads.

A very important principle in engineering says a shock, blow or impact can be expressed or measured only by means of two units, force, and travel. The factor, travel, therefore demands a yielding of the body which is to receive the blow. If the yield is small, the force will be large, but if the yield is large the force will be small. The impact of the foot against a hard sidewalk is cushioned by the rubber heel because the yield of the rubber diminishes the force acting on the leg and body. The lack of yield of the leather heel increases the force so that the jar is transmitted into the entire body.

It was the working out of this principle that led the Baltimore & Ohio Railroad Co. to put into service during the last two years about 10,000 cars equipped with the Duryea Underframe. These 10,000 cars are particularly interesting to shippers because the primary function of the Duryea improvement is to protect goods from damage by reducing train slack and by supplying long-travel, low-force shock protection so that impacts in switching and in train service, are softly cushioned.

With this principle in mind it is interesting to make a brief review of car construction from the time when automatic coupling of cars was first introduced. This takes us back to the era of the wooden car having a load-carrying capacity usually under 30 tons. The shock-protecting device or draft gear consisted of a spring interposed between the coupler and car



Baltimore & Ohio 70-Ton Hopper Equipped With the Duryea Underframe.

underframe. This draft gear supplied yield so that the force was diminished, and this cushioning effect was augmented by the yield of the wood structure of the car. There was more time then to make up trains, traffic congestions and hump yards were unknown and freight traveled leisurely. Then came the larger capacity cars: the economy of larger load-carrying units was recognized. Increased traffic and the elements of economy and safety brought in all-steel car construction which in turn made it possible again to increase the load-carrying capacity to 50, 70 and even 100 tons.

It is noteworthy that in the evolution of car design, every change toward the modern steel car increased the mass of the loaded unit and the rigidity of the car structure. These changes therefore all tended to increase the severity of the impacts be-

tween cars; increased mass resulted in increased energy of the blow, and decreased yield caused increased force. The increased force is the factor which damages the lading.

Since the amount of yield is so important, the solution of the problem of shock protection, naturally suggests increasing the yield of the draft gear which is known as draft gear travel. But the requirements of train service enter the problem and it is found that any increase in draft gear travel must of necessity be followed by increased slack in the train. Before the Duryea Underframe, the means of cushioning the impacts between cars, always has been a yielding mechanism or draft gear at each end of the car, connecting the draw heads or couplers to the car. Such an arrangement necessarily must produce train-slack because this slack is directly proportional to the travel of the draft gears, and consequently creates the bellows-effect in a train of cars. The bellows-effect is the difference between the bunched and stretched length of the train; it is the factor which always has prevented the use of long travel draft gears. Slack of itself does not create shock, but if there were no slack there could be no shock. If you have ever tried to tow a friend's automobile you had an excellent example of the relation between slack and shock. If you started the pull with slack in the tow line the resulting jerk would be severe and tend to part the line. The amount of shock possible to obtain, increases in severity in proportion to the amount of slack. The slack in a large number of freight trains has reached a point where under critical track conditions it causes rough handling and damage to lading.

If the air brake operated uniformly on every car throughout the train no force would be exerted between adjacent cars. This ideal, however, would require not only a simultaneous action of every brake cylinder throughout the train, but it would require also the retarding effort of the brake on every car to be exactly proportional to the gross weight of that car. At present, the retardation on cars is neither uniform nor simultaneous. When the brakes are applied from the locomotive they apply serially from the head-end toward the rear, which results in retarding the head-end first. The amount and rate of braking effort developed on the head-end of a train, in advance of that developed on the rear-end, plus the amount of slack in the train determines the impact velocity between adjacent cars. The slack runs in and, other factors being equal, the severity of the resulting end shock, is proportional to the amount of slack.

To some extent, expert manipulation of throttle and air will control the action of slack but conditions constantly arise beyond the control of the engineman. When an emergency brake application is made, the retardation of the head-end of the train takes effect immediately, the

The Coupler Gear and Cushion Gear, and Arrangement of Coupler and Coupler Carrier.

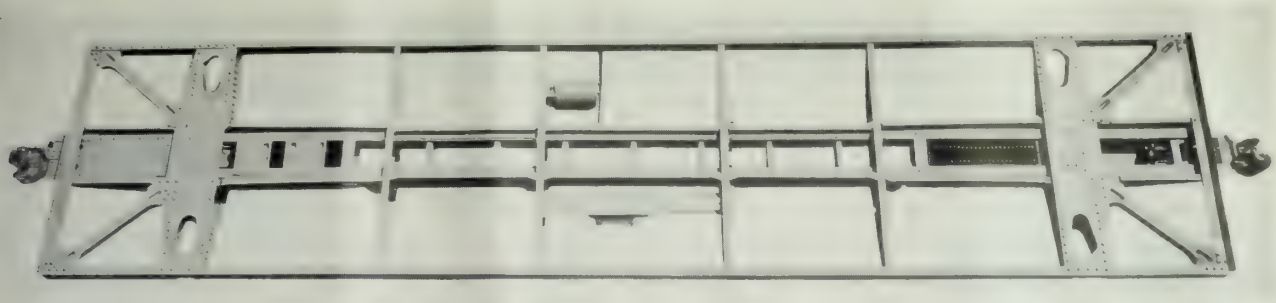
slack runs in, and the impact is so great that the train often is buckled, and a large proportion of the lading arrives in bad order. Quick action of the air brake does not permit the necessary gradual adjustment of train slack. Variation of piston travel, train line leakage, and burst air hose, cause bad slack conditions beyond the control of the engineman.

It is apparent that the problem of protecting goods in transit demands the elimination of slack for train service and increased cushioning for switching service. This has been the dilemma, for the shock protection device must have long-travel if the impact force is to be low. The modern friction draft gear has been limited by the American Railway Association to 2¾ inches of travel, and this short travel requires the generation of a tremendous force between car and draft gear in its attempt to protect the lading of a car switched at about four miles an hour. Moreover, the forces increase tremendously with increase in switching speed, so we must increase the cushioning capacity, decrease the train slack, increase the yield and decrease the force if we are to be successful in protecting the lading from damage.

We believe our new cars equipped with the Duryea Underframe, present a revolutionary change in car design, and offer a successful solution of the problem of shock-protection in train service and in switching service. In these cars, the rigid connection of the center sill to the car structure has been superseded by resilient connections. The cushioning device does not function as a draft gear because it transmits only the pull of its own car: the pull of the train is taken directly through the center sill. A train of these cars may be considered as a long back-bone extending from the locomotive to the caboose, composed of center sills articulated by couplers, and to each of these center sills a car structure is attached resiliently. This arrangement permits the car structure to move endwise on the center sill, and this motion is entirely independent and apart from the motion of any other car in the train. The cushioning means has been separated from the slack-producing means and slack has been reduced to an ideal minimum while length of cushioning-travel has been increased to an ideal maximum.

The car is designed so that the body and its underframe form a distinct load-carrying structure, and the center sills form a distinct buffing and draft column resiliently attached to the body bolsters. The center sill is guided vertically and laterally by the end sills, bolsters and cross bearers; its longitudinal motion, in relation to the car body and trucks is resisted by long-travel, low-force cushion gears. Standard A.R.A. couplers are key-attached to the center sill in a manner which permits a small longitudinal movement of each coupler, in relation to the sill. The amount of coupler travel in relation to the center sill is entirely independent of the travel of the sill in relation to the car and trucks. As applied to our new freight equipment, the Duryea Underframe provides a cushioning travel of eight inches and about four times the cushioning capacity of the conventional draft gear with less than one-third of the end force. Standard types of trucks, brake rigging, body superstructure, couplers and other specialties are used.

Road tests of trains of empty cars were conducted on our Adamstown branch near Brunswick, Maryland. Trains of 25, 26, 50, 100 and 125 box cars equipped with the Duryea Underframe were given emergency



The Duryea Underframe As Applied to the Baltimore & Ohio 50-Ton Box Cars; Cover Plates Removed From One End to Show Cushion and Coupler Gears.

brake applications from the engine and from the rear end of the train while traveling at the recognized critical speeds of 12 to 14 miles an hour. Mikado locomotive No. 4486, having a tractive power of 63,200 pounds, was used in all tests and a dynamometer car recorded the forces. Impact registers or shock recording gauges were placed in the dynamometer car and also in the first, middle, and last cars of the train. The tests of 100 cars and 125 cars were unusually severe; the engineer's valve was placed in emergency at speeds of 12 and 13.1 miles an hour. These severe tests caused no buckling whatever in the train, no cars were derailed, the slack running in was not noticeable, and the impact recorders did not show any more shock than would be registered on cars equipped with A.R.A. draft gears, in ordinary yard switching service. None of the cars was injured in any way, and were immediately returned to service after the test. We do not believe that such tests could have been conducted on cars equipped with conventional drafts gears, without causing considerable damage to the equipment. The tests proved conclusively that train-slack has been brought under control.

Our freight claims department has been tracing the shipments of clay products in order to compare the breakage occurring in cars equipped with the Duryea Underframe versus the breakage in cars of conventional design. Comparing shipments of sewer pipe during April, May, June, and July of 1929 from Mecca, Ind., to the Chicago district, we found that in six Duryea cars, the total breakage amounted to only 30 pieces while 250 pieces were broken in the shipments loaded in cars of the conventional type. Other shipments of flue linings, drain tile, sewer pipe and conduits indicate that shipments in Duryea cars are afforded greatly increased protection from breakage.

The Duryea Underframe has been applied to 50-ft. passenger express cars, 50-ton box cars, 70-ton hopper cars, 70-ton 50-ft. mill type gondolas, and 70-ton 65-ft. mill type gondolas now in service on the Baltimore & Ohio Railroad. I understand that this construction also has been successfully applied to tank cars of 5000-, 8000- and 12,500-gallon capacity. In tank car operation, leaking tank anchor rivets always present a source of danger in the transportation of inflammable liquids. The high forces developed by the A.R.A. draft gears continually tend to tear the tank from its underframe, and so strain the riveted connection that leaks inevitably begin at this point. The long-travel, low-force shock-protection afforded by this new type of construction should no doubt protect the tank so that the hazards of transporting inflammable liquids will be greatly reduced.

Automatic Locomotive Washer at Last

Almost from the beginning of railroads the work necessary in keeping locomotives clean has been one of the costly items for the mechanical departments. Such cleaning, as everyone realized many years ago, was important for two reasons, for the sake of appearances, the effect upon the public, and also as a part of the proper care of costly machinery.

The peculiar feature of this washing business is that for all these years of locomotive operation no one ever devised an automatic cleaning device —not until about two years ago. Car washing machines have long been commonplace, here and in Europe, but baths for the big engines were given in the same old, expensive way. If, as happens with respect to many such things, you haven't given careful thought to this expense, you will be interested to know that at one eastern railroad terminal the cost of washing locomotives for one year amounted to $11,483.

There are about 61,000 locomotives in the United States, and most of them are washed, or ought to be, at the end of every run. Doing this work in the old way, by hand, is a pretty costly item. The possible saving is seen in the fact that the $11,-483 paid out by the one railroad mentioned a moment ago, would pay for two automatic locomotive washers such as have just been put on the market by the Transportation Equipment Co. of New York.

For two years these washers have been in service in the Wilkes-Barre terminal of the Delaware & Hudson where the device was developed by T. A. Mackin, general foreman for that company. Except for a few changes, to be expected in bringing any new idea to perfection, they have cost nothing for maintenance. With such equipment a locomotive can be cleaned from the domes to the rail in 30 seconds, and this means a thorough cleansing for domes, jacket, cab, running boards, motion work, rods, drivers, tender wheels and all other parts, in the brief time it takes to run the locomotive through the washing area. No hand labor is required.

Two washing units, motor operated, swing automatically into position and throw hundreds of powerful, enfilading streams which completely envelope the locomotive and cleanse many parts that would be impossible to reach from the ground with a hose.

The Automatic Locomotive Washer is electrically controlled and operated. Engines entering the washing area in either direction close a circuit which starts the motor and opens the valves on the cleaning fluid lines.

The automatic washer for locomotives has been tested for two years, thoroughly, before any effort was made to put it on the market. Mechanical department heads from many roads have watched it in operation. Already the builders have orders from the Lehigh Valley, the Erie Railroad, the New Haven System, the Canadian National Railways, and the Baltimore & Ohio Railroad.

AN INNOVATION IN STEAM AND

SHOCKLESS
NOISELESS

THE elimination of the two-inch gap in crossings will stop the hammering action now prevalent, increase the life of crossings, and reduce damage claims on lading and a large share of the expense due to nuts and parts coming loose on your equipment.

THE Whalen Continuous Rail Crossing not only accomplishes these economies, but reduces the noise, thereby increasing the comfort of passengers, and proves itself a real dividend payer by lowering maintenance costs of track, car and locomotive equipment. Made for both steam and electric railway service and for either manual or electric operation. Also equipped with electric thermostatic heat control to prevent freezing in locations where weather conditions make it necessary.

THE Whalen Continuous Rail Crossing shown on the opposite page is operating—every day—under heavy traffic at the junction of the Union Pacific and Southern Pacific at South Gate, California.

WE INVITE your inspection and will gladly send details and facts regarding this crossing.

Write for details.

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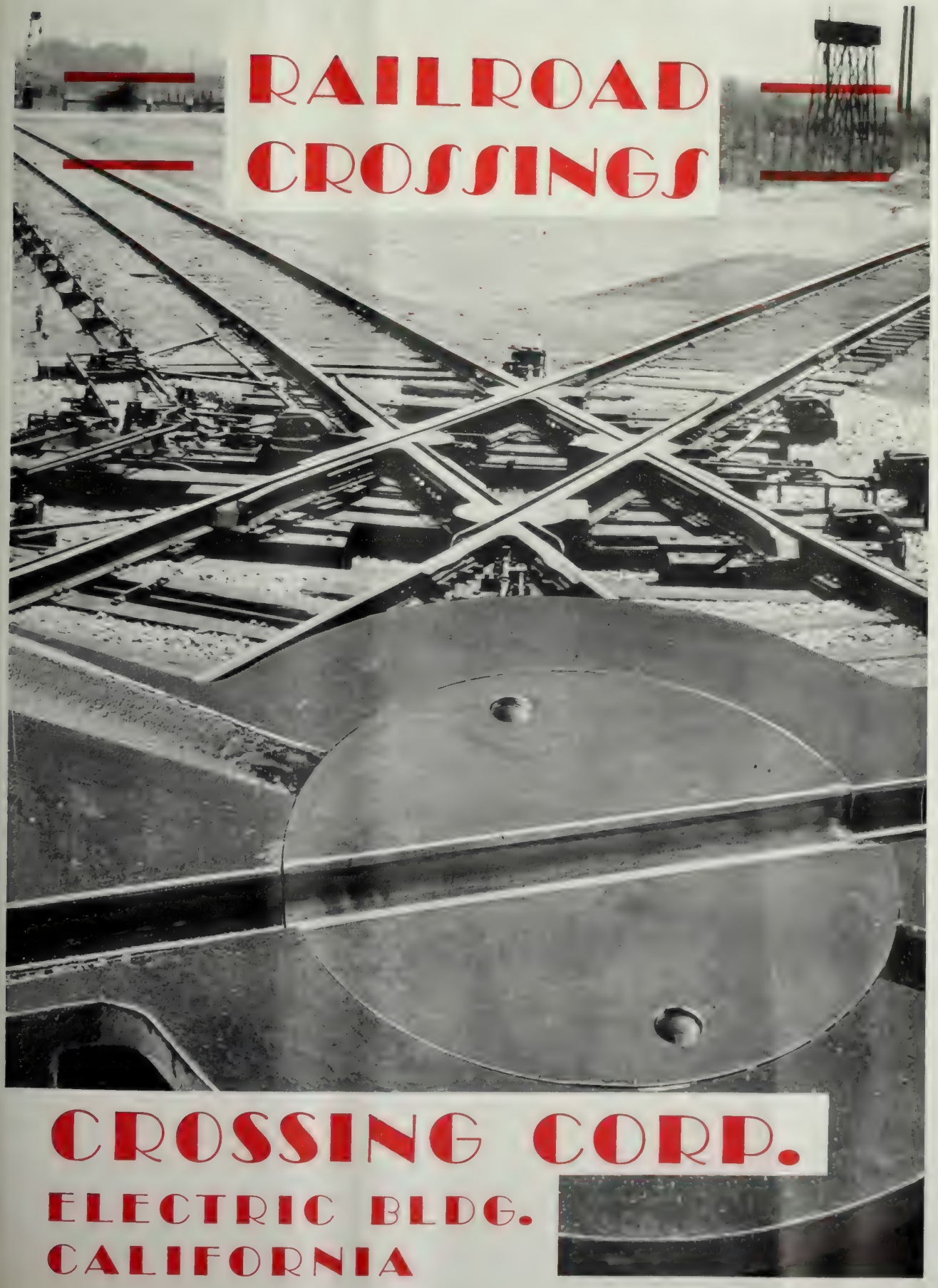

Editorial Comment

Locomotives of Tomorrow

IN THIS issue we present an article titled "Locomotives of Tomorrow" in which we quote the opinions of a number of leading railroad officials regarding the future of the locomotive. Advanced studies of this sort emphasize the necessity of not only planning for the next few years, but show that we must also consider the problems which will have to be met by the next generation.

It seems to be the opinion of the executives who have contributed to this article that the life of the locomotive will become more limited. We are not, however, concerned alone with the future: we must consider first the problems of today. Only about thirty-one per cent of the existing power of the Class One railroads is less than 15 years old, yet we find the best minds agreeing that to secure efficiency in the future the life of the locomotive probably will have to be limited to 15 years.

It seems as if the first plan for the future should be to classify all power, and establish a definite program of retirement of obsolete equipment on a much faster ratio than has been done in the past. Such a program should also be made a permanent one, and not be altered and buffeted around by changes in business conditions or reductions in traffic. The direct economy possible with modern power will more than show adequate returns on the capital investment.

One writer says, "Based on the reluctance with which the railroads of this country as a whole accept and incorporate general improvements in locomotive design, it will be a great many years before any material change wil be effected in the average power or efficiency of the locomotive. This condition is not the result of inertia on the part of railroad executives, but is dictated by financial inability to scrap and replace existing power which is necessary in order to reap in full the advantage of the improvements in modern design and detail."

If he is correct, and it is not inertia, then let's sell the financial power by having a program prepared as suggested for modernizing or retiring old power with the figures to support it. You know bankers and boards of directors do like figures, even if they don't mean as much as some good common horse-sense and a periscopical eye that can look over today's barriers and see the needs of tomorrow.

This Will Never Do

The English dirigible R-100 needed 56 hours and 12 minutes to cross the Atlantic on the return flight from Montreal to Cardington, England. Pretty slow. Only about 58 miles an hour. The distance covered was 3287 miles. The Graf Zeppelin flew 4200 miles, one year ago, over practically the same course, except for deviations due to weather, and did it in 55 hours 24 minutes, traveling at the average rate of 75 miles an hour. The English will have to speed up considerably if they hope to get the business.

Some Birds

Captain Hawks is now the world's champion of the air. That is to say he had that title August 15. So many remarkable things happen nowadays that an editor, writing in the present tense, has to keep his past participles on the desk, ready for instant use. Hawks beat the Lone Eagle's time between the coasts by 2½ hours, flying the distance in 12½ hours. His average speed at all times was more than 200 miles an hour, but with a tail wind between Albuquerque and Wichita he made 250 miles an hour. At this rate Hawks could fly around the world in less than five days. The man who put that into a book a few years ago as part of a plot would have been called silly.

May Peace Continue

"Harmony among the railway employes of the railways," says A. F. Whitney, president of the Brotherhood of Railway Trainmen, "has never been greater than at the present moment. There is not a ripple of discord; no grievance, dispute or misunderstanding that cannot be quickly adjusted, because employer and employe approach each other on a proper basis of cooperation which is the only foundation for success in industry."

Nature Can't Be Regulated

It begins to look as if nature were in league with the railroads. For the second year in succession the water has been so low in the Mississippi River that the government-owned barge line has been forced to decline bulky freight for shipment to New Orleans. Meanwhile the railroads go on giving a dependable service every day in the year.

In a Mysterious Way

In an editorial discussion of the recent decision of the Interstate Commerce Commission reducing grain rates, the New York Herald-Tribune says:

"No one will wish, especially with the wheat situation what it is, to see the farmer or the shipper of grain pay more than a 'just and reasonable charge for transportation'. On the other hand, it is time that the practice of subsidizing industry and agriculture at the expense of the railroads be halted. It is to be hoped that this latest decision of the commission will be submitted to a thorough airing to determine whether it is as free of Hoch-Smithism in its essentials as it is in its 'wording'."

An Outrage

Captain Hawks may fancy himself very secure in the Hall of Fame, but for many earnest travelers he is going to be just a pain in the neck. How, for example, is a man to reach home ahead of the checks he cashed in New York or Los Angeles with this bird carrying bank mail across the continent in 12 hours?

How About Government Barge Lines?

Air transport is too young for rate regulation, says Clarence M. Young, assistant secretary of commerce for aeronautics. Mr. Young agrees with conclusions of the Interstate Commerce Commission that there is no great need for regulation of air transport, similar to the regulation of railroad rates, but he pointed out that federal consideration of such action probably

will be desirable in the future. The recent Watres Act, providing for adjusted rates in carrying air mail, should help to bring conclusions on the question, he believes.

"The fundamental economics of air transportation," said Mr. Young, "have not been sufficiently determined to enable operators intelligently to set up rate principles, for the existence of passenger-carrying air service has been short."

But the Harveys Remember

We have just finished reading a story in Capper's Magazine for September, about the Fred Harvey System. It tells how the catering business bearing his name was established on the Santa Fe, beginning with a lunchroom at Topeka 54 years ago, and how it has grown into the wonderful chain of eating houses and dining cars known to travelers everywhere.

But, as usual in such stories, not a word is said about the faithful and marvelously competent men who made this famous system possible. Nothing much ever is said about anyone except the generals, few of whom ever fire a shot. The reason, obviously, is that the generals do the planning, the big brain work—in some cases—and the men in the ranks do the work, if they live. Doubtless the Harvey system never would have attained its present excellence if Fred Harvey, long since gone to his reward, had not set the pattern, kept things moving properly, and maintained discipline. But, just as certainly, the Harvey plans would have gone down to defeat if it had not been for loyal and skilful helpers.

What would the Harvey system have been 30 or 40 years ago, if there had been no Victor Vizzetti, the great Italian chef, known by people all over the world, the man who traveled over the Santa Fe System keeping the kitchens and the cooks in order? Who remembers the rotund and smiling B. Schermerhorn, or the tactful and suave D. Benjamin, directors-in-chief, who went everywhere, night and day, watching out for the Harvey interests—the public's food? These three men made eating a joy. Who, even in the Harvey family itself, remembers old Colonel Fisher, one of the Chesterfieldian house managers of 50 years ago, or his famous battle-cry as Number Four came 'round the bend, "D-i-s-h u-p!" A few old-time railroaders remember.

Vizzetti, Schermerhorn, Benjamin, Fisher—we haven't heard their names in many years, names that bring back memories of days when the ambition to eat regularly in a Harvey house seemed just a bit extravagant even for a very long way in the future. Seventy-five cents a meal was going it pretty stiff.

The day came, finally, long years afterward, when as a train dispatcher pulling down $125 a month—if no garnishee had got in first—we were entitled to eat at the passengers' tables for 35 cents a meal. Toothpicks were quite the proper thing then. We always were careful to take one, too, as we strutted out on the platform. How else, we wondered, were people to know we had eaten in the Harvey house? O, memories that bless and burn!

What Happened at Obispo

You just can't believe anything you see in the papers nowdays. Take, for instance, the peculiar reports printed the afternoon of August 28 about what purported to be a wreck at San Luis Obispo. Streamer headlines across the front pages in Los Angeles declared that 27 persons had been injured in a rear-end collision between the Padre and the Lark, Southern Pacific fast trains en route to San Francisco. The United Press report said the Padre had stopped to make some repairs, and an employe was working under the engine when the Lark came along and plowed into it. Here is a part of the report:

> Paul Shoup, president of the Southern Pacific Railway, was in the Padre train, his private car having been attached to it at Los Angeles.
>
> With terrified passengers screaming and milling about after being abruptly precipitated from their berths by the force of the crash, Shoup quickly mustered a crew of railroad officials, administered first aid to the injured and quieted the pandemonium.
>
> Many passengers, besides those reported injured, were thrown violently from their berths to the floor of the Pullman.
>
> The impact was so terrific that the entire steel Padre of 10 cars was shoved forward even though the brakes on them all were locked.

The absurdity of this stuff became apparent when the Los Angeles Times appeared next morning with a report from San Francisco. The so-called wreck turns out to have been merely an "adventure" for the passengers. Here is the authentic account:

> Comparatively trivial injuries received by passengers and train crew members in the rear-end collision of the Lark and Padre of the Southern Pacific at San Luis Obispo early today made the affair an exciting adventure rather than a tragedy, so that it was a gayly chatting throng that descended from the two trains upon their arrival in the Bay district.

There you are. One paper has the "terrified passengers screaming and milling about" pitched from their berths, and the president of the road quieting the "pandemonium." But this wasn't all of it. Remember, the crack about the Padre standing at the station while men made repairs? It seems this was just another fine bit of newspaper exaggeration. The report from San Francisco said the Padre was "undergoing regular inspection." Furthermore, the number of passengers injured was grossly magnified. There were not 27. Only 24. True, the employe who was under the engine at the moment, making the regular inspection, lost his left leg—that is to say it was amputated, but he was an employe, not a passenger. To prove that the whole thing was trivial, a motion picture actress said in an interview that she was sound asleep at the time, although it was only 2 o'clock in the morning. As she used to be Charlie Chaplin's leading woman she doubtless had many a worse bump in her time.

So, you see, the so-called wreck didn't amount to a thing. The story belonged in the society column where it would have appeared this way:

> One of the jolliest wrecking parties of the season took place last night at Baloney Beach when the Snohomish Limited and the Skagway Express stopped for a few moments to permit an employe to polish the cow-catcher. Inadvertently the express struck the rear end of the limited almost hard enough to wake the flagman. However, the crews apologized all 'round, and refreshments were served. Many of the passengers declared it was the most thrilling journey they had ever had.

This One is Easy

A fruit grower at Ojai, Cal., has just returned from an eastern trip bringing with him several questions. Why, he asks, should dried apricots be retailing at prices ranging from 28 to 38 cents a pound at a time when Ventura county growers are offered only nine cents a pound for their crop?

"There is something wrong with this situation,"

he declared. "It is costing us too much money to get our output in the hands of the consumers. I believe we growers are entitled to a much higher price and the consumer at the same time to a considerably lower one."

Of course this gentleman thinks the railroads are getting most of the money whereas, in fact, they get the smallest part of it.

About one and one-quarter cents a pound of the 38 cents charged for dried apricots in the East, is paid to railroads for hauling. From Los Angeles and other California points to Kansas City and the East, fruit dried or evaporated, but not candied, crystalized, glacéd or stuffed, moves in less than carload lots for $3.30 a hundred; carload $1.65 a hundred, minimum of 40,000 lbs. or $1.25 a hundred, minimum 60,000 lbs.

The California grower ought to talk to his neighbors. Dried apricots cost 20 cents a pound in one of the cheapest chain stores in Los Angeles, and other dried fruits from 15 to 17 and 25 cents. Pears, evaporated, cost 27 cents. Much of this stuff comes to Los Angeles in trucks. Perhaps if the growers used the railroads they might save money.

It will be necessary to look elsewhere for the difference between the growers' nine-cent return and the 28- or 38-cent price to the consumers. There are all kinds of likely places where the missing differential might be concealed—high rents, taxes, wages, house delivery, higher standards of living, the talkies, pee wee golf. Many places. But don't begin staring at the railroads. They didn't get it.

The French Flyers

Even if they are a bit slow about paying their war debt, the French go the limit in paying their visits. The gallant aviators, Coste and Bellonte, who flew from Paris to New York the other day to be greeted by thousands, led by Colonel Lindbergh, deserve the congratulations showered upon them from every part of the world. But, beyond succeeding in an undertaking in which others have died, just what have these courageous adventurers proved? What does it add to the world's knowledge of aviation and its possibilities? Such flights certainly disclose nothing new about engines or motors. Thirty-eight or 40 hours in the air is nothing to boast about nowdays. We know quite a bit already about engine endurance. We feel rather positive, too, that the Frenchmen's flight will create no demand for trans-Atlantic airplane passenger service. We know no more now than we knew a month ago about the treacherous weather, dead spots, or air pockets that have claimed valuable lives in the last several years. All we do know is that these Frenchmen are very brave gentlemen, extremely and unnecessarily reckless, even after three years' preparation. With all their remarkable skill, they are worth much to aviation, alive. Dead, as they might be today except for what seems to have been a miracle, they would be, like their vanished compatriots, Nungesser and Coli, only a memory.

Colonel Lindbergh's flight to Paris convinced the world that it was possible to fly across the ocean from west to east, with a good tail wind, but it did not prove that airplanes can carry passengers across the Atlantic. What it did do was to start reckless and poorly-prepared fliers seeking glory which, as events turned out, they found in eternity. A dozen persons perished in three years trying to make the flight westward or in the opposite direction, and this proved that that kind of flying was a pretty dangerous business. Now that the thing has been accomplished, both ways, no more valuable lives should be sacrificed. If this speed-crazed age can not be satisfied with 60 or 70 miles an hour in a big dirigible then it ought to stay at home.

Lindbergh was too smart to attempt the westward flight against the wall of wind he knew existed. He came home on a ship. Fear, it should be remembered, is an intelligent appreciation of danger; it is not cowardice. Next to making the hazardous flight, Lindbergh's most heroic act, in our opinion, was recorded in his determination not to risk himself again in the air; he had become far too valuable to aviation. That took real courage when all the world was shouting his praises as a flyer. It is to be hoped that after Coste and Bellonte have complied with the French ideals of courtesy they will show themselves equally sensible.

Aerial Transport of Tomorrow

Quite a number of thoroughly responsible gentlemen whose opinions are worth a good deal in their business are saying things in this issue of *Transportation* about Motive Power of Tomorrow. A very fine subject to write about, and certain to be interesting and important in human living for many a year, but another kind of motive power equally germane in any such discussion, is standing in the spot-light—aerial transport. Don't ignore it.

Someone in Washington, connected with the department of commerce, said not long ago that when the figures have been assembled, some time next year, it will be discovered that 200,000 persons traveled by air in 1930. This forecast is based on the fact that in 1929 air liners flew more than 100,000 miles every day in this high-pressure country of ours —not including army or navy flying, or air mail flights to Mexico, the West Indies or Central and South America. This means that many a dollar is to be missing from railroad passenger revenues while the roads go bravely on providing one luxury after another for travelers who demand what steam roads do not provide—speed. Forty-five or fifty miles an hour nowdays is rather poky going.

Steam railroads have done much in a hundred years for comfort and safety. They are, indeed, our most perfectly trustworthy, cheap and luxurious utility. In the last 20 years, more perhaps than in any other period of their history, they have developed very wonderfully on constantly declining revenues. But their progress has been slow when compared with aerial transport. True, men have talked and dreamed for 400 years about flying only to be laughed at as was Professor Langley who fell into the Potomac with his heavier-than-air contraption, and broke his heart. To realize how rapidly aviation has grown you have only to remember that this happened in 1903, the year when the Wright brothers, two bicycle mechanics, made a short flight at Kitty Hawk, N. C., much to the amusement of wisecrackers everywhere.

But the Wrights did some astonishing things in the next few years. People began to think there might be something in their crazy ideas after all. In 1908 Farman remained aloft for 1000 yards. A London paper vouched for the truth of the yarn. Then the Wright brothers flew 46 miles an hour at a height of 1600 feet, and Wilbur Wright said planes

Baker

Any business which uses human beings to do work that a machine could do, is unfairly limiting the productivity of those human beings *and the productivity of its own capital.*

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would go 60 or 70 miles an hour some day. Bleriot flew across the English channel the next year. Glenn Curtis flew from Albany to New York in 1910 and told the reporters that some day people would fly from New York to Chicago!

In 1911 Cal Rodgers flew from the Atlantic to the Pacific for a $50,000 prize for a trip to be made in thirty days. His actual flying time was three days, 10 hours, 4 minutes, but his elapsed time, as he made the trip attended by a special train with a crew of mechanics, was over the thirty-day limit. He said some day the flight would be made in less than his actual flying time. People laughed at him.

Since those days the records have been startling. The air mail began service in 1918 from New York to Washington. In 1919 United States Navy Seaplanes flew across the Atlantic. And in the same year Brown and Alcock flew across, the first civilian nonstop flight. In 1924 the U. S. Army flyers went around the world. In 1925 Commander John Rodgers, U.S.N., made the official flight from the Pacific Coast to Hawaii—all but the last miles, which he traveled by boat when picked up after being given up for lost. In 1927 Lindbergh made his famous solo flight from New York to Paris. Now four modest German flyers land in Nova Scotia after a trip over the ocean on a visit that was almost unannounced and which they say was only a routine training flight. They crossed in 44 hours. Before New York had finished welcoming the Germans two Frenchmen flew from Paris to New York—a non-stop airplane flight in about 38 hours, and the supply of ticker tape was exhausted.

One day last month, August, a letter was mailed in Los Angeles addressed to a man in New York—air mail. It left the Pacific Coast Saturday evening. Monday morning, before 11 o'clock, the man in Los Angeles received a telegram from the New York office containing the information requested. Casual and commonplace now. Scarcely worth telling. Planes have flown nearly 300 miles an hour. We fly to Kansas City in 12 hours on regular schedule. Captain Hawks flew from Los Angeles to New York in 12 hours, 25 minutes, 3 seconds, making only one stop enroute!

What a record! What an age of marvels! Looking it over, who is wise enough or brave enough to forecast the future of this latest wonder of the world! Who would have imagined, in 1900, that in less than 30 years a man would leave Los Angeles in the early morning in an airplane, eat his dinner that evening in New York and attend a theater, unperturbed, no one staring at him. If he had suggested any such foolish performance a hundred years ago he would have been burned at the stake.

But Often They're Wrong

It appears incredible that state public utility commissions are always wrong in their judgment of the evidence in valuation cases as such judgment is construed by the federal courts, in the opinion of Howell Ellis, member of the public service commission of Indiana, according to his testimony before the New York legislative commission on revision of the public service law.

The Indiana commission, which was created in 1913, has yet to win a rate and valuation case in the federal courts, Mr. Ellis said, although many such cases have been taken by utilities to those courts.

"The trouble in connection with utility valuations and rate-making during recent years, in my judgment," Mr. Ellis testified, "has been that too often the courts have been disturbing the reasonable judgment of state commissions arrived at after a consideration of all the evidence."

Mr. Ellis said he did not believe there was any need for the regulation of public utility holding companies.

"If sufficient authority is given to the state commission over operating utilities and if this authority is properly exercised the spectre of the holding company now seen standing behind many large operating companies becomes less alarming," he said. He cited instances in which his commission, through regulation of the operating companies, had lopped off unfair costs for services or salaries imposed by the holding companies.

"If the commission has authority to regulate the rates and in so doing has the power to scrutinize the operating expenses of the operating utility," he said, "the issuance of any amount of securities by the holding company cannot result in a burden on the utility consumer."

People Still Play

All over the nation, even in the small towns of the Middle West, and in that part of the wheat belt where farmers are said to be on the verge of bankruptcy, thousands of minature golf courses are in operation or being built. This is a form of entertainment costing more than the average theater ticket. The grounds and equipment cost from $5,000 to $50,000. These grounds, without any exaggeration, are crowded every evening and every Saturday afternoon by well-dressed people enjoying themselves. People do not spend money for such pleasures when they are short of food or clothing.

And, speaking of food. No one has heard of any losses or blow-ups in that line. Childs's Restaurants, with which some of us are familiar, report that for the first six months of 1930 they cleared $670,000 compared with $420,343 for the same period of 1929.

Do people suffering from a real depression spend their money for life insurance? Ask Dad. He knows. The State Life of Indiana in California sold more new life insurance in the first seven months of 1930 than it had in that period last year; more by $4,000,000 worth.

There is still another side—luxuries. The makers and dealers in such truck always suffer in a real depression. Silk stockings belong in this class. More stockings were sold in the first six months of 1930 than in the crazy war days—but at lower prices. Prices are going back where they belong. All luxuries are selling in the usual volume. The department of commerce reports that for the year ended June 30, the poverty-stricken countrymen of this land smoked 119,935,433,264 cigarets, and the Hershey Chocolate Company earned only $4,255,000 in the first six months of the year, a paltry $50,000 more than it earned a year ago. Do people eat chocolate when they need meat?

Goods, if they are worth the price demanded can be sold today as in any period provided they are advertised. But buyers will never break in and poke around looking for things. There never was a time when a manufacturer couldn't have a depression of his own. All he has to do is talk foolishly and stop advertising.

LOCO VALVE PILOT

¶ The Locomotive of TODAY is INCOMPLETE without the LOCO VALVE PILOT:

During 1930, Valve Pilot equipped locomotives will cover more than THIRTY MILLION MILES, saving thousands of tons of fuel, thousands of hours of time and hauling increased tonnage at lower cost per mile.

In improved acceleration alone, time saved by the Valve Pilot locomotive amounts to several minutes in the average hundred mile run.

¶ The Locomotive of TOMORROW will find the LOCO VALVE PILOT as indispensable a part of its equipment as the airbrake or sander:

Years of continuous satisfactory service on locomotives of all types has resulted in consistent extension of the use of the Loco Valve Pilot by our leading railroads.

Independent Test Reports and other valuable data on Valve Pilot locomotive operation will be sent on request.

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Little Stories About Big Men

A. P. Russell
Executive Vice President, New Haven System

DON'T HIGH HAT the office boy. Don't be snooty with the clerks. One of them may be your boss some day. It has happened many a time. In a list of about 350 railroad officials, examined a few days ago, some interesting classifications came to light, showing how they had started their careers as wage earners.

Not included in the list are dozens called "unclassified." Doubtless a good many of that kind began work as office boys or common laborers, but forgot the fact when they wrote their little biographies, in deference to the tender susceptibilities of their families. So many women dislike the idea of having it known that their meal ticket started his earning career with a pick and shovel, or running errands for a fussy office force.

The list is enlightening. If 350 careers may be accepted as fairly representative of 5,000 or more in railroad service, it seems reasonable to say that clerks and young engineer graduates get along faster than any other class of employes in marching to the top. College training doesn't appear to have had very much influence in these lives. All the 85 engineers numbered here are college men, necessarily, but very few, indeed, among the clerks had anything better than high school or a business college course when they began work.

Not one of the 40 telegraphers on the list had been in college, but went to the top nevertheless by way of the operating department. The number of law clerks, all college graduates, 23 of them, was exactly equal to the roster of office boys all of whom had gone to work upon leaving grade schools. It is interesting, too, to know that several of those classified as common laborers are now presidents or vice presidents of railroads. Among the 116 who started as clerks many are now in charge of purchases and stores, some are presidents and quite a number are just one peg below that rank.

What a tabulated list might show, covering the entire 5,000 officials, certainly would prove conclusive of something or other. For one thing it seems rather positive, doesn't it, that except in the scientific or highly technical professions, the thing that counts most in getting ahead in the world is the stuff of which a man is made, and not his family tree or his college degree. We once knew a chap who lugged around throughout his lifetime two fairly well-earned degrees and several honorary keys and things, not to mention framed certificates and so forth. This man tried all his life to sell real estate, but eventually became a preacher at $3,000 a year, a startling finish. There may be a moral here if we could only think of it.

Another classification holds our attention: We had never imagined a dining car steward turning out to be anything else, but here are three who started in this school of tact and diplomacy, and landed right side up at the top! There's no telling how many former stewards are packed away in this book we've been examining, and another thing, we are going to dismiss them with a wave of the hand.

How They Started

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(Continued on Page 38)

PENNSYLVANIA RAILROAD
New Steam Heating Plant
Philadelphia, Pa.

Robert Farnham, *Chief Engineer*
Philadelphia Improvements
T. P. Watson, *Principal Assistant Engineer*
Philadelphia Improvements
Graham, Anderson, Probst & White
Architects
United Engineers & Constructors, Inc.
Engineers & Builders

Construction Work *for* RAILROADS

The long experience of this organization in railroad work and our intimate knowledge of a railroad's problems are proven by the construction of 22 locomotive terminals, 34 shops, 43 power plants and many passenger and freight terminals and other general building and engineering assignments.

In almost every case enumerated, we did the design as well as the construction—cooperating to the fullest extent with the client's own engineering department and producing the new facilities with speed at low cost.

UNITED ENGINEERS & CONSTRUCTORS, INC

Design & Build

SHOPS
LOCOMOTIVE TERMINALS
PASSENGER TERMINALS
POWER PLANTS
ELECTRIFICATION
FREIGHT TERMINALS
OFFICE BUILDINGS

Among our many railroad clients have been the following:

Atlantic Coast Line Railroad
Baltimore & Ohio Railroad
Boston & Maine Railroad
Buffalo, Rochester & Pittsburgh Railway
Canadian Pacific Railway
Central Railroad of New Jersey
Chesapeake & Ohio Railway
Chicago, Burlington & Quincy Railroad
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Erie Railroad
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Illinois Central Railroad
Lehigh Valley Railroad
Louisville & Nashville Railroad
Missouri Pacific Railroad
Mobile & Ohio Railroad
Pennsylvania Railroad
Pittsburgh & Shawmut Railroad
Reading Company
Rutland Railroad
Southern Pacific Lines
Southern Railway
Terminal Railroad Assoc. of St. Louis
Union Pacific Railroad
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UNITED ENGINEERS & CONSTRUCTORS
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PHILADELPHIA NEW YORK NEWARK CHICAGO
LOS ANGELES BUENOS AIRES RIO DE JANEIRO MONTREAL

MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

"VELMO" Upholstery . . . The . . . and Modern

Showing VELMO on seats of Lounge Car, Union Pacific System.

PATRONAGE that is profitable and permanent in railroad travel can be attracted by comfortable upholstery for seats and chairs. . . . And when upholstery is colorful Chase VELMO, the acme of seat luxury in railroad transportation has been achieved. Patterns and textures can be had to conform to all decorative schemes.

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UPHOLSTERY
FABRICS
SANFORD MILLS, SANFORD, ME.

New York, New Haven & Hartford DeLuxe Day Coach Upholstered in a new VELMO Frieze.

Chase VELMO in Chicago, Rock Island & Pacific Observation Car . . . an expression of homelike atmosphere and cheery comfort.

The spirit of decoration and utility has been obtained through the medium of Chase VELMO better than with any other fabric. And to assist further, we now offer you the services of an experienced and recognized stylist who would be glad to suggest or co-operate in shaping up your original ideas. Address inquiries to: L. C. Chase & Company.

THESE ARE ONLY A FEW EXAMPLES

Link Between Modern Home Comfort

Railroad "Travel-ability"

THAT Chase VELMO upholstery is used in the superior equipment here pictured, is one evidence of its universal choice . . VELMO adds new luxury to travel.

Two views showing VELMO upholstery as Baltimore & Ohio Equipment.

Chicago, Burlington & Quincy Observation Car with VELMO upholstery in a pleasing variety of designs and coloring.

CHASE
Velmo
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Selling Agents:
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Considerable detail attention is being given to car-interior decoration . . . and VELMO offers remarkable opportunities for the improvements necessary to modern travel as it is linked today with true home comfort.

Blue VELMO Frieze in Chesapeake & Ohio Salon Cars.

Chesapeake & Ohio Cafe Lounge Car VELMO Upholstered.

OF MANY RECENT INSTALLATIONS

Ewing Galloway.

The Hotel Ritz, Madrid. Only the Rear End of It Can Be Seen, But There Actually is an Automobile in This Picture, at the Extreme Left.

Little Stories

(From Page 34)

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FORMER stenographers, we imagine, would show rather well in the list of successful men in the railroad business, provided they stenog for the right men. Such an employe, taking a general manager's letters, handling his telegrams, traveling with him here and there, has a most exceptional chance to learn the fine points of the operating department, equal in some respects to the opportunities offered a telegrapher. Stenographers become secretaries, are promoted some day to the title of assistant-to, and one fine morning find themselves in charge of a division or of some lesser special work, to land eventually where many of them are now to be found, at the top.

The rule holds good also for stenographers assigned to the heads of traffic or accounting departments. No other man has an equal chance to learn the business. But, of course, chances are lost or overlooked by many, which explains why there are so many waiters and taxi drivers in the world.

Speaking of office boys, we see on the assignment sheet the name of a distinguished product of that fraternity, A. P. Russell, executive vice president of the New Haven System. Mr. Russell has charge of a number of things, among them public relations, real estate, industrial development, valuation and insurance. To keep himself fully occupied, however, he is also president of the New England Transportation Co., and in addition represents his company in all matters in Massachusetts and Rhode Island. There are other offices and titles in his biography, but for the moment these will suffice.

Mr. Russell was born — Arthur Perkins Russell — at Leominster, Mass., June 16, 1871, so he must now be about 59 years young. His father was a minister, the Rev. Thomas Clarkson Russell. When he was 16 Arthur, just out of the public schools, started for himself as office boy in the executive offices of the New York & New England Railroad Co., in Boston.

YOU GET the full significance of what we said a few moments ago about men getting ahead in the world and how this depends principally upon the stuff of which they are made. In young Russell's case early environment had much to do, doubtless, with the manner in which he exerted himself at 16 to rise above his lowly job of office boy. Every time some minister's son violates a law or shocks society in other ways, the nation's funny men hasten along with their curb-stone humor about the troubles of preachers' offspring. There isn't really any sense to that old-time wheeze, but it provides an excellent excuse for setting down here some interesting facts with respect to the comparative success of clergymen's sons.

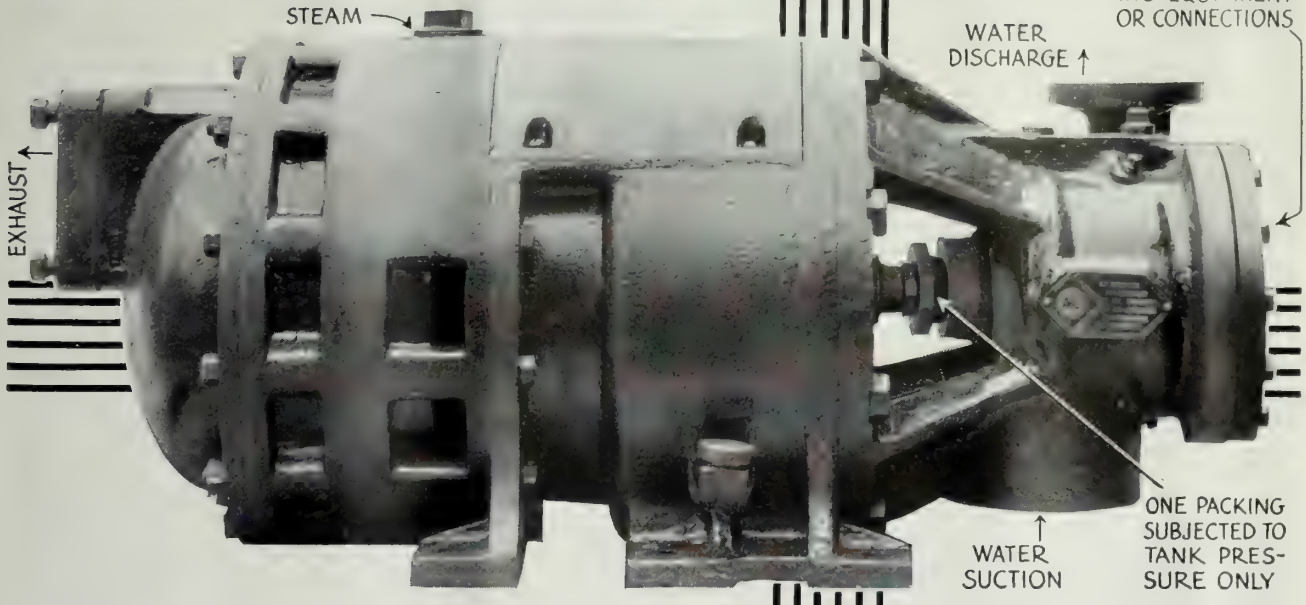
In Who's Who in America for 1922-23, the latest available figures, 2,695 persons, a little more than 11 per cent of the names enrolled, had clergymen for fathers. In addition quite a number listed their fathers as farmer-preacher or teacher and preacher. In the census for 1870, the one nearest the birth of most of these notables, there were 40,000 Protestant clergymen in America, about 0.4 per cent of all the men. So, in proportion to population, clergymen fathered fully 28 times the average number of notables. About 1870, one Protestant clergyman in every 15 had a child who won a place in Who's Who in America. This was, in proportion to their numbers, about 2,400 times as many eminent persons as did unskilled laborers, 35 times as many as did farmers, four times as many as business men, and more than twice as many as the average of other professional men. This, the biological and otherwise scientific chaps say, was due to superior opportunities these children had along cultural lines, helpful home training in serious thinking, thrift and self-expression.

For the benefit of the few who may not know Who's Who, it should be said that the volume, issued every two years, contained in 1928-1929, about 28,800 names of persons whose positions or achievements made their personalities of more than general interest. Incidentally, no sketch ever has been paid for in that book, and none can be paid for.

All of which appears to give proper credit to parentage producing a son such as Arthur Perkins Russell who began earning a living as an office boy. Also, if you have read this carefully, you can understand why it was that three years after he started the nerve-testing duties assigned him in the executive offices of the New York & New England Railroad at Boston he was appointed secretary to the vice president and general manager, and chief clerk to the company's secretary. Now look at the record this young man hung up for himself, in the years that followed, as disclosed in the New Haven's official magazine:

In 1898, when the New England Road was leased to the New Haven, he was appointed chief clerk in the law department of the company for Massachusetts. He studied law evenings, and in 1907 was admitted to the Massachusetts bar, subsequently filling the position of assistant attor-

B-A *Locomotive Boiler Feed* PUMP


STEAM
EXHAUST
WATER DISCHARGE
PUMP ROTORS RE MOVED FROM END WITHOUT DISTURB-ING EQUIPMENT OR CONNECTIONS
ONE PACKING SUBJECTED TO TANK PRES-SURE ONLY
WATER SUCTION

Self Contained . . . pump, turbine and regulating device comprise one enclosed and compact unit.

Simple Control . . . regulation by ordinary globe valve in cab . . . over-speed protection by fly-ball governor.

Safe . . . thousands of similar turbines in locomotive service certify to its safety.

Rugged Construction . . . castings and other parts are unusually heavy and simple in design . . . ball bearings especially designed for long life.

Easily Dissembled . . . pump rotors can be removed on the engine without disturbing piping or connections.

Handles Hot Water . . . designed particularly for use with the Locomotive Water Conditioner . . . handles hot water at high efficiency.

The B-A PUMP
is an essential unit of
The Locomotive Water CONDITIONER

—feed water heating
—hot water storage
—oxygen removal
—water treatment

▼

The manufacture, supply and service of boiler water treatment chemicals is the primary business of The Bird-Archer Company.

These activities and expert services properly include the installation and service of mechanical devices, likewise designed to promote locomotive boiler efficiency.

THE BIRD-ARCHER COMPANY

NEW YORK • CHICAGO • ST. LOUIS The Bird-Archer Company, Limited, Montreal

ney at Boston for a number of years.

From 1910-1913 he was legislative counsel of the company in Massachusetts.

On Jan. 1, 1914, he was transferred to New Haven and placed in charge of the newly organized valuation department. Between 1914 and 1918 while thus engaged he wrote a complete and authenticated history of the New Haven and all of its properties.

Feb. 1, 1918, he was appointed federal counsel, not only in charge of valuation matters but all relations with the government and the Interstate Commerce Commission.

When the control and operation of the road was actually separated from the corporate affairs, he remained with the corporation as assistant general counsel and corporate commissioner of real estate.

MR. RUSSELL was a member of the common council of Boston. 1897-1898, representing the Dorchester district, and was elected to the Massachusetts house of representatives as a Republican from 1899 to 1902, inclusive.

At the end of federal control, March 1, 1920, he was appointed vice president with headquarters at Boston, representing the president in all matters, and in direct charge of the real estate, valuation and insurance departments. He was appointed chairman of the railroad's industrial development committee, which had been formed the previous year primarily to encourage new industries along the line.

On Dec. 1, 1923, his duties were enlarged to include general jurisdiction in all matters pertaining to public relations and publicity. The following July, under Mr. Russell's guidance, the New Haven established an employe magazine, Along the Line, with a circulation of 31,000 copies monthly.

In June, 1925, the New England Transportation Co. was chartered to operate motor coaches on the highways of Massachusetts, Rhode Island, Connecticut and New York. Mr. Russell became president and formed its organization. He organized the conference which later became the Motor Transport Division of the American Railway Association, and was selected as its first chairman. He is also president of the New England Motor Bus Association.

He is a director of the Old Colony and Union Freight Railroads, president and director of the Boston Railroad Holding Co., trustee of the Boston Terminal Co., vice chairman and director of the Springfield Street Railway and the Worcester Consolidated Street Railway.

Mr. Russell is a member of the federal law committee of the Association of Railway Executives and chairman of the committee of the New England railroads on federal legislation. He also is chairman of the railroad contact committee of the New England Shippers Advisory Board. During the World War, Mr. Russell was chief of the war bureau of the town of Woodbridge, Conn.

Forrest W. Rosser
General Manager, Erie Railroad, Eastern District

ANOTHER successful railroad man's name bobs up in pleasant memories at mention of office boys, Forrest W. Rosser of the Erie Railroad. He is general manager of the eastern district now, with headquarters at Hornell, N. Y. It isn't difficult to understand how an office boy might rise to a dignified post as a lawyer. The office boy's training fits him quite naturally for the attorney's duties, sitting and thinking the months away—and then again, just sitting—but a general manager. Well, he does much thinking but most of it on the jump. He is the human buffer on a railroad. If a general manager can do his work satisfactorily and keep out of Matteawan he is entitled to anything he can get. The mortality rate in this class is high. It takes the intestinal stamina of an ostrich and the mentality of a chief justice to hold the job. On most roads the salary attached to a general managership is attractive, and some men grow rich at it, but this is because they never have time to spend the money.

Forrest Rosser started as a "messenger" on the C. J. & M. Ry., in 1889. As in the case of stenographers, a messenger in a railroad office does all the things the boss doesn't wish to do. Rosser developed, as so many messengers do, into a telegraph operator, a glorified position in which he had nothing much to do except keep the office, the platform, and all the lamps clean, work 12 hours and as much more as the agent could stick him for, and use his spare time counting up his forty dollars a month.

Once started, Rosser filled a number of jobs and several positions: car distributor, special agent, extra dispatcher on the Pennsylvania; dispatcher on the Milwaukee; chief dispatcher, trainmaster, and superintendent on the Rock Island, and superintendent on the Katy. He has served also, in Chicago, as president of the General Superintendents' Association, president of the Western Railway Club, the greatest debating society in the nation next to the United States senate, and chairman of the Complete Car Unloading Commiteee, Mid-West Advisory Board. Mr. Rosser is 55 years old, is married and has two children.

Cunard's Super Liners

The contest for supremacy of the Atlantic continues, the latest company to announce the laying of bottoms which will surpass any now in vogue being the famous British Cunard Line. Arrangements have been completed to build two liners which will surpass the Bremen and Europa in size and speed. The shipbuilding firm of John Brown & Co., of Clydebank, Scotland, will construct the first super-liner, work to get under way during the early autumn of the present year. It is said this ship will be of 75,000 tons, and exceed 1000 feet in length, with a beam of 115 feet. A speed of 32 knots, which will enable the vessel to make the Atlantic crossing in four days flat, is the aim of marine engineers in charge of the designing and building. Accommodations would provide for 4000 passengers and a crew of 700. The ship will be put into service during the spring of 1933.

Syphon Safety

COSTS NOTHING —and is *always* operative

Thermic Syphons pay for themselves. They:

1. Increase fuel saving.
2. Increase boiler capacity.
3. Reduce boiler maintenance.
4. Reduce cracked side sheets and stay bolt breakage.
5. Increase flue life.

The safety feature is incidental to the circulation caused by Syphons. It costs nothing, and is always operative.

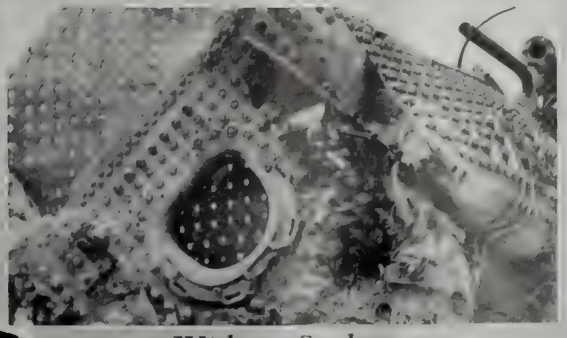
Three recent low water cases in Virginia, Pennsylvania and Canada on non-Syphon locomotives cost six lives and heavy financial loss.

Three recent low water cases on Syphon equipped locomotives resulted in only slight damage entailing total expense of less than one thousand dollars.

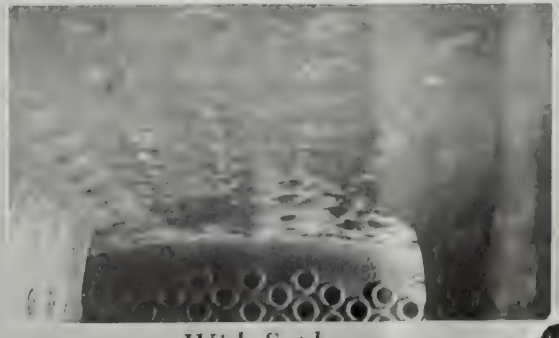
THERMIC SYPHONS
—Your Best Investment

Increased Circulation
Increased Fuel Economy
Reduced Maintenance
Safety

LOCOMOTIVE FIREBOX COMPANY
NEW YORK CHICAGO MONTREAL



Without Syphons



With Syphons

The Ultra-High Steam Pressure Engines of Europe

By

H. N. Templeton

Herbert Photos

One of Germany's High Pressure Locomotives, Turned Out Recently, From the Schwartzkopff Works in Berlin.

THE LOEFLER method of generating high pressure steam, tested successfully in a stationary plant at Vienna a year ago, has now been applied to a locomotive which the Schwartzkopff Company at Wildau, near Berlin, has built for the German Railways. This engine has a working pressure of 100 atmospheres or 1,420 lbs. per sq. in., with the same output as the standard express train locomotives, but still well within the weight limit of that class.

The peculiarity of the Loffler method lies in the fact that the water is evaporated in a boiler drum not in contact with the combustion gases, the heat generated on the grate being imparted to it indirectly by a current of superheated steam. The heat of the combustion gases is transferred to a superheater, and there is no possibility of boiler scale depositing on the heating surfaces.

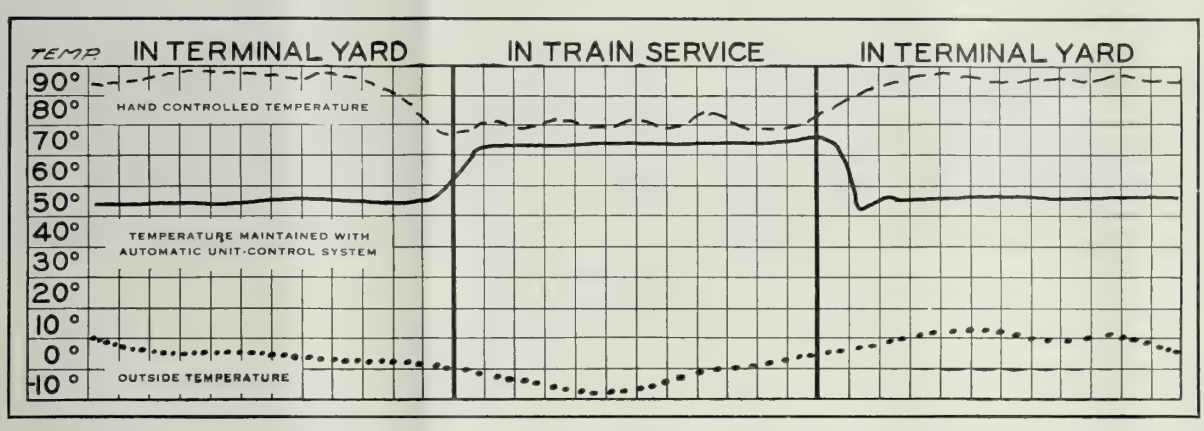
The locomotive is built as a three-cylinder compound unit with two external high-pressure cylinders, each of 220 mm. (8.6 in.) dia., and a low-pressure cylinder of 600 mm. (23.5 in.) dia. arranged between the bars of the frame. The stroke of all three cylinders is 660 mm. (26 in.). The locomotive is equipped with two-axle drive, the low-pressure cylinder driving the front-axle, and the two high-pressure cylinders the second driving axle. The high-pressure cylinders are machined from a solid steel forging. The wheel bases and diameters are the same as those on a standard express-train locomotive.

A theoretical saving in coal of 47 per cent as compared with modern superheated-steam locomotives has been calculated, so that an actual saving of 40 to 45 per cent may be expected in service.

In spite of the higher working pressure, the Germans declare, the locomotive possesses at least as great safety as the standard locomotive, if not greater, since the narrow superheater tubes, which are exposed to the fire, cannot cause any great damage even should they develop a defect, and since the cylindrical walls of the evaporator, which is not fired, are machined all over and are free of all perforations for pipe connections.

The design undoubtedly is more complicated than that of the standard locomotive. At the same time the boiler consists essentially of simple coils of pipes, the manufacture and maintenance of which involves no extraordinary expenditure. The most expensive part of the boiler is the evaporator drum, but this will scarcely require any maintenance. It is, therefore, to be expected that the saving in coal obtainable will not be offset by increased expenditure on maintenance and charges on capital.

SAVES COSTLY TONS ON WINTER RUNS



{The above chart is prepared from actual comparative service tests}

Automatic Unit-Control Vapor System

reduces steam consumption for car heating, particularly in mild weather when over-heating is most common; saving approximately 20 tons of coal per car per season.

This is accomplished by maintaining uniform temperatures in train service, and automatically reducing and maintaining predetermined lower temperatures while cars are in terminal yards. Also prevents possibility of "freeze-ups" often caused by lack of manual attention.

This System is all-automatic.

We point with pride to the endorsement of our *Automatic Unit-Control Vapor System* by an increasing number of railroads on which it is being adopted as standard equipment.

VAPOR CAR HEATING CO. Inc.

RAILWAY EXCHANGE, CHICAGO, ILLINOIS

CAR HEATING SPECIALTIES FURNISHED BY CAR HEATING SPECIALISTS

Three Sections of Florida Limited Trains, and One Section of a Fast Express Loaded With Strawberries, Leaving the Atlantic Coast Line and the Richmond, Fredericksburg & Potomac Union Station at Richmond, Va., Carrying Tourists Home From Florida Resorts and Berries for the Northern Markets

During the latter part of December, 1929, a new high-pressure locomotive was introduced on the London, Midland & Scottish Railway. It was built by the North British Locomotive Co., Ltd., Glasgow, in conjunction with the Superheater Company, Ltd., under the supervision of Sir Henry Fowler, K.B.E., chief mechanical engineer of the London, Midland & Scottish Railway.

The frames are standard with those of the three-cylinder simple 4-6-0 type locomotives of the "Royal Scot" class. But the higher initial working pressure, and the increased range of steam expansion possible with this new engine led to the adoption of the three-cylinder compound arrangement.

The high-pressure cylinder is situated well forward between the frames, and drives the front pair of driving wheels by means of a cranked axle. The two low-pressure cylinders are outside of the frames, and are connected to the intermediate driving wheels. Both the high- and low-pressure cylinders are set at an inclination of 1 in 50 with the horizontal.

The boiler of this locomotive is the most noteworthy feature, for the design of which the Superheater Co., Ltd., primarily is responsible. The boiler consists of three portions generating steam at 1400 to 1800 lbs., 900 lbs. and 250 lbs. per sq. in., respectively.

The 1400 to 1800-lbs. portion of the boiler is a closed circuit, and forms the water-tube firebox of the locomotive. Distilled water is used in this portion of the boiler as the water is never used in the locomotive cylinders. The use of distilled water prevents the formation of boiler scale, and eliminates one great trouble with water-tube fireboxes, i.e., the difficulty of cleaning the tubes. The vertical tubes are connected at their lower end to the foundation ring and to the ring forming the base of the combustion chamber. At the upper end they are expanded into two cylindrical equalizing drums from which coils pass to the interior of the large steam drum. The steam circulating in these coils evaporates the water in the large steam drum, and generates steam at a pressure of 900 lbs. per sq. in. This large drum is a machined forging of nickel steel. The steam generated in this drum is passed through the superheater to the high-pressure cylinder.

The forward portion of the boiler is similar to the standard locomotive boiler; the shell is of nickel steel and the tube sheets of mild steel. Steam is generated here at 250 lbs. per sq. in.

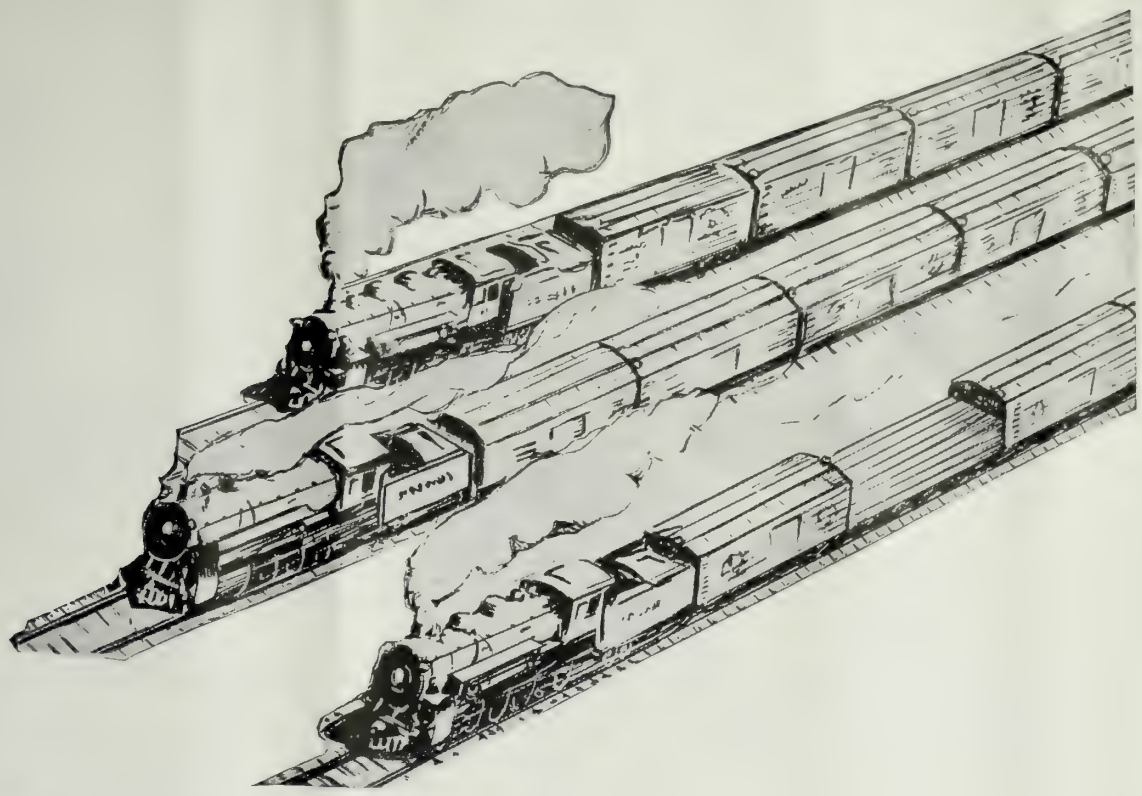
Water is fed to the high-pressure drum by a pump drawing its supply from the low-pressure boiler. Water is supplied to the low-pressure boiler by a live steam injector on one side and an exhaust steam injector on the other. Arrangements have been made to by-pass any excess pressure from the high-pressure drum to the low-pressure boiler to avoid waste through blowing off.

The throttle lever operates the high- and low-pressure throttles simultaneously.

Steam from the high-pressure drum, after being superheated, passes to the high-pressure cylinder, is exhausted into a mixing chamber where it meets the low-pressure steam which has been superheated. The mixture of the two passes to the two outside low-pressure cylinders.

Aside from the boiler, the dimen-

Cylinders—	
High pressure	1—11½ in. by 26 in.
Low pressure	2—18 in. by 26 in.
Wheels, drivers, diam.	81 in.
Wheel base, driving	15 ft. 4 in.
Boiler pressure—	
Watertube firebox	1400 to 1800 lb. per sq in.
High pressure	900 lb. per sq. in.
Low pressure	250 lb. per sq. in.
Weight on drivers	126,200 lb.
Weight, total engine	174,200 lb.
Weight, engine and tender	261,600 lb.
Tractive effort	33,200 lb.



What is Railroad Production?

RAILROADS are manufacturing plants. Their product is "Transportation."

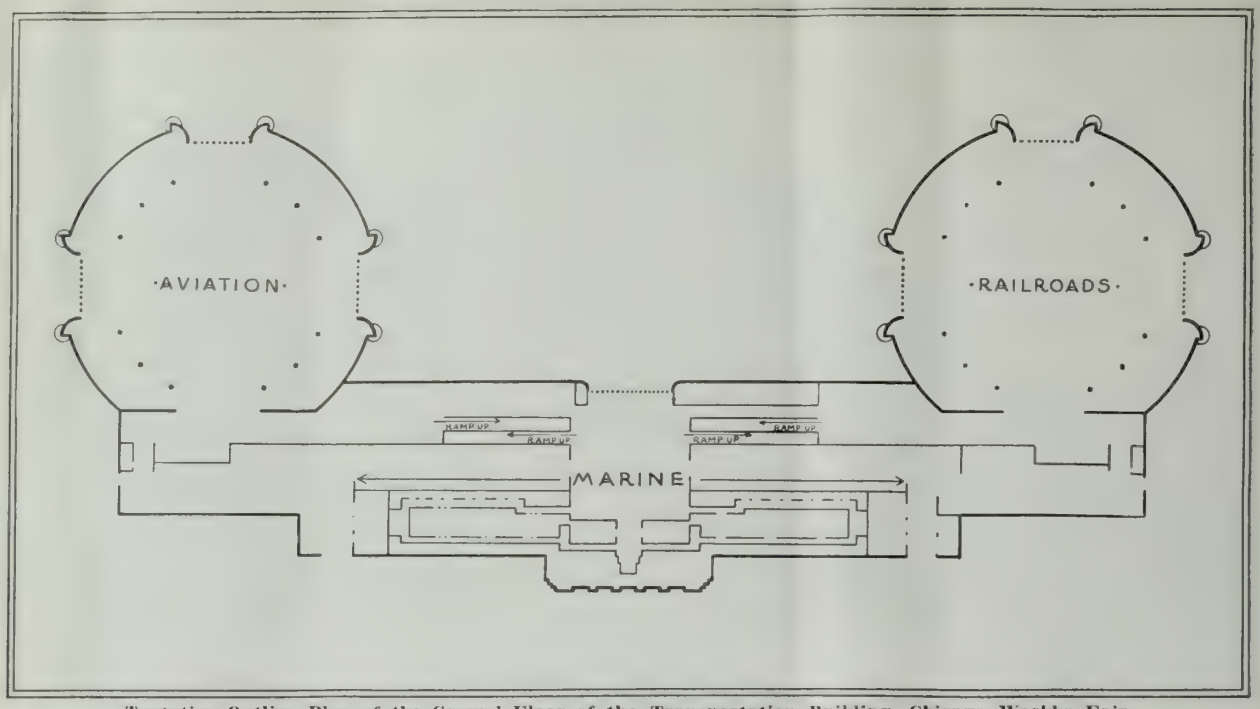
Increased production is as important to the railroad executive as it is to any manufacturer.

Gross ton miles per hour is the measurement of railroad production.

A comparison between non-Booster locomotives and Booster-equipped locomotives hauling through freight covering a comparable period showed that The Locomotive Booster increased railroad production by over 10%

If all the locomotives on the division had been Booster-equipped, the increase would have been much greater. It will be when the job is completed.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.
NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL



Tentative Outline Plan of the Ground Floor of the Transportation Building, Chicago World's Fair.

sions of the locomotive follow closely that of the 3-cylinder "Royal Scot" 4-6-0 engines. The principal dimensions are shown in the table.

This locomotive has been introduced experimentally to be used on the heaviest main line express trains on the London, Midland & Scottish Railway.

Two locomotives of similar design are now being built for the New York Central Railroad and the Canadian Pacific Railway by the American Locomotive Company and the Montreal Locomotive Works, Limited, respectively. These locomotives, of course, differ in certain details to suit American railroad practice, but the principle involved and the general design are the same as the English locomotive. The basic boiler designs of these locomotives are prepared and controlled by the Superheater Company and its Canadian affiliate.

Transportation in the Chicago Fair

Upon the steady development of transportation, particularly during the last hundred years, one of the large features of the forthcoming Chicago Fair is to be builded. This is to be called the Travel and Transport Show, and its particular field will be to depict the growth and present development of transportation, both here and abroad. Two methods of presenting the picture are being considered: exhibit halls and grounds after the general manner of other outstanding world's fairs, although radically different in treatment and arrangement; and a moving pageant of transport; vehicles of the land and water and air, proceeding slowly under their own power past the reviewing stands and the grand stands.

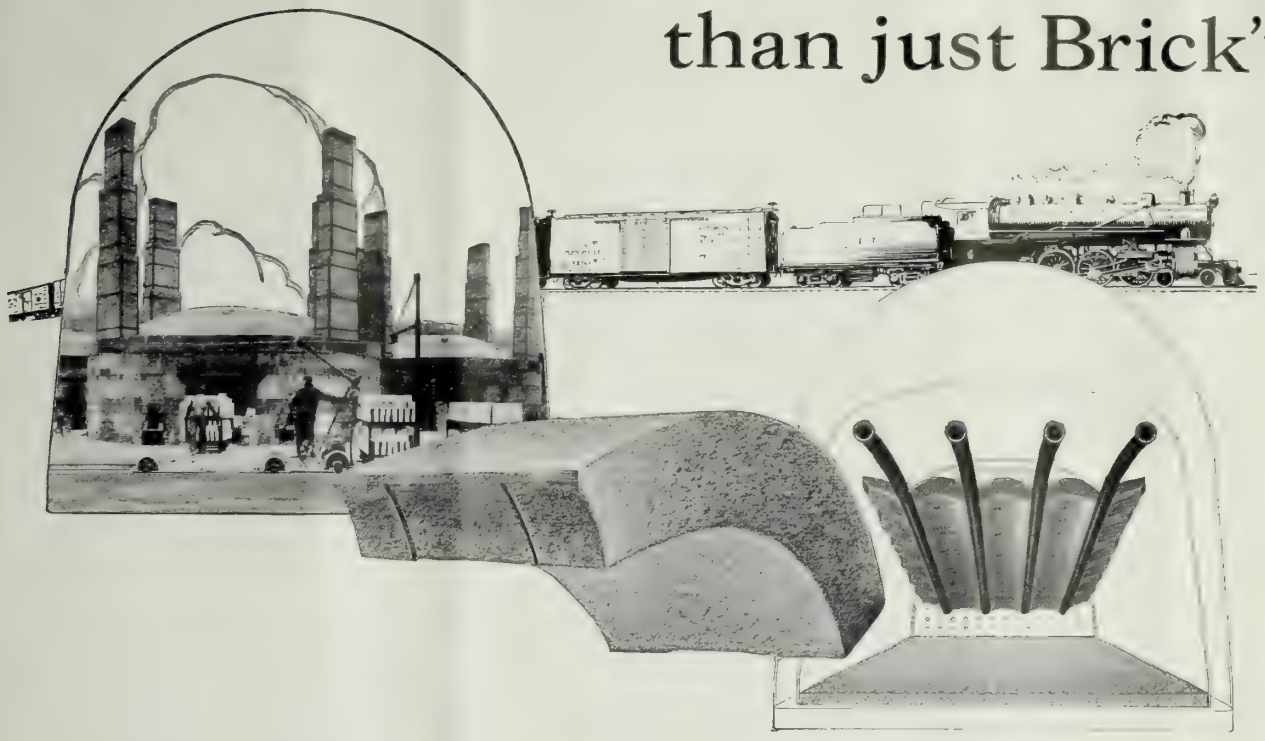
The reviewing stands and the grand stands are to be built to face Lake Michigan in such a way that its surface, carefully protected by bulkheads, can be used for waterborne craft of every variety; early coasting vessels and canal boats, old-time American river boats, making a huge splashing with their giant paddle wheels as they go; lake steamers and ocean vessels, old and new, either full-sized or in miniature, will sweep past the stands. It is possible that some of these last craft may be reproduced in miniature working models, from eighty to one hundred feet in length, each proceeding under its own power in the waters of the lagoon and, at a slight distance, presenting an astonishing resemblance to an actual ocean liner of today.

In the space between the fronts of the stands and the rim of the lake will be put down standard railroad tracks and a highway. Upon the smoothly paved surface of the latter will move first the creaky, lumbering wagons of a century ago, then stage coaches, post-chaises, Conestoga and other forms of freighting wagons, "prairie schooners" and the like. In a later development of the pageant, this same broad road becomes the path way of representative types of automotive vehicles, showing the development of the "horseless carriage" from the days of Selden and Haynes and Ford down to the highly efficient trucks and cars of 1933.

Similar use is to be made in the pageant of the railroad tracks. Small locomotives of 1833, some of them with upright boilers and curious walking-beam effects, balloon stacked wood-burners of the 'forties, the 'fifties and the 'sixties, big and handsome freight and passenger pullers of today, these and their trains, old and new, an electric locomotive or two, an oil-electric, curious looking locomotives, and their trains from overseas (the foreign railways already are showing a tremendous interest in the fair, and are planning a large participation in it) all these, and more, and gorgeous, great floats peopled with gaily costumed folk, the very apotheosis of pageantry, will also run (by unseen power) upon steel rails. So much for water and for land. And toward the end of this gay pageant, the chariots of the air, the giant dirigibles and the heavier-than-air planes, the seaplanes and the amphibians, man's new conquest of the vast untrodden pathways, made vivid in its every detail.

Twice a day during the duration of the Fair—each afternoon and each evening—this slow-moving, swiftly-enacted pageant will tell to the thousands, on the comfortable stands, the story of A Century of Transport Progress.

"There's More to the Security Arch than just Brick"



LOCOMOTIVE ARCHES involve engineering as well as brick. Their design should be based on a broad knowledge of locomotive combustion and the influence of the Arch on its efficiency.

This knowledge is possessed by the American Arch Company by reason of 20 years of intensive engineering study.

For years past practically every brick Arch installed in locomotives has been designed in cooperation with American Arch Company's combustion experts.

This rich experience in locomotive combustion is still at the service of American railroads, to apply the Arch to new locomotive designs and to study special combustion conditions, thus insuring proper functioning of the Arch.

This engineering service is only one of the many advantages to be had when American Arch Company supplies the Arch brick.

American Arch Company, Inc.

Locomotive Combustion Engineers

One of the New Class 0-1 Electric Locomotives of the Pennsylvania Railroad, Now Undergoing Tests.

Testing Electric Engines On the P. R. R.

Two electric passenger locomotives of an entirely new type, designed and built especially for the Pennsylvania Railroad's New York - Washington service when the line is completely electrified, are now being operated experimentally by the Pennsylvania in the electrified zone surrounding Philadelphia.

These locomotives, the first through service electric passenger engines ever operated in and out of this city, are being thoroughly tested and tried out on through express trains between Philadelphia and New York, and between Philadelphia, Baltimore and Washington, the electric engines of course hauling the trains only to the limit of the present electrified trackage.

In the meantime, work is going forward rapidly on the electrification project itself. The line from Philadelphia to Trenton was completely electrified recently, while electric service was introduced to Wilmington not quite two years ago. Work is now actively under way on the segment between New York City and New Brunswick, N. J.

The new passenger engines now being tried out for the through electric service were designed and built by the Pennsylvania Railroad in its Altoona shops. The electrical equipment was produced by the Westinghouse Electric & Mfg. Co. A new type of electric freight engine, also especially designed for the New York-Washington electrified operation, will be brought out in the near future.

The new passenger engines have many unique and improved features, adapting them particularly to the through fast road service under heavy traffic conditions for which they are intended. They are known as Class 0-1 and have two 4-wheel trucks, one at each end of the engine, with two pairs of drivers between. The drivers are 72 inches in diameter.

Each pair of drivers is driven by two motors mounted on a steel frame, each pair of motors having a capacity of 1060 horsepower at a speed of 56 miles an hour, or a total capacity for the locomotive of 2120 horsepower at that speed.

No main or side rods are used to transmit power to the driving wheels. Motor pinions drive a gear mounted on a quill, the quill bearings being supported in the twin motor frame. A flexible link drive is used to transmit power from the gear to the driving wheels, permitting them to move up and down freely under every condition of operation.

The engine operates on alternating current collected at 11,000 volts from an overhead trolley wire by pantographs similar to those used on Pennsylvania suburban cars. Power is conducted to a main transformer at the center of the locomotive and through this is transmitted to the motors at a voltage under the control of the engineman. The transformer and main motors are air cooled.

The new engines are equipped with the coder system of cab signals, so that signal indications given on the signal poles beside the track are exactly reproduced in the cab of the locomotive directly in front of the engineman. When the signals change a whistle blows and continues to blow unless shut off by either the engineman or fireman.

The locomotives are 52 feet 8 inches long and 15 feet high. In working order their total weight is a little less than 300,000 pounds with approximately 75,000 pounds on each driver at the rail.

An especially attractive feature of the new electric engine is its flexibility in operation. When used singly or in multiples as required, it will provide any power demanded by size, weight or speed of trains. Control apparatus is arranged so that the engine may be operated from either end. Roller bearings are used in all journals and in the motor armature bearings.

The First Mail 95 Years Ago

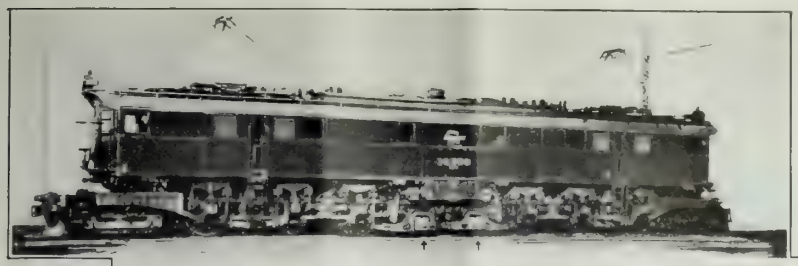
Just 95 years ago, on Aug. 25, 1835, United States mail was first carried by railroad, according to figures made public by the postoffice department Aug. 26. During the first fiscal year, railway trains carried mail 270,504 miles, while in the fiscal year 1929, the total mileage in transporting mail by trains was recorded as 269,831,975, an increase of 269,561,271 miles over the total of the first year of service.

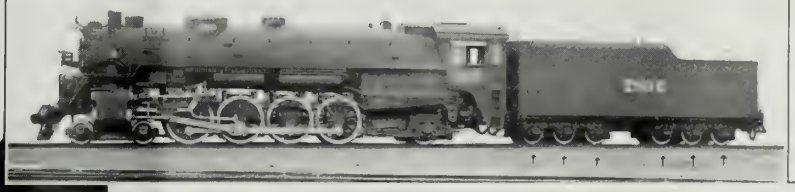
Formal opening of a railway between Washington and Baltimore marked the beginning of the railway mail service on Aug. 25, 1835. During the first year of the railway mail service trains were used less than any other medium for transportation of mail. Annual transportation in post coaches and stages amounted to 16,874,050 miles; in sulkies and on horseback, 7,817,975 miles; in steamboats, 906,959 miles, and in railroad cars, 270,504 miles. In 1836, mails were carried on at least 200 miles of railway, and annual transportation totaled nearly 300,000 miles.

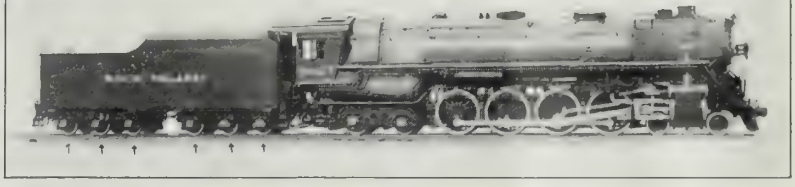
In 1845 there were but 43 employes in the railway mail service, receiving a total of $37,513 for their annual pay. The service now employs more than 20,000 persons, receiving a total annual salary of more than $50,000,000.

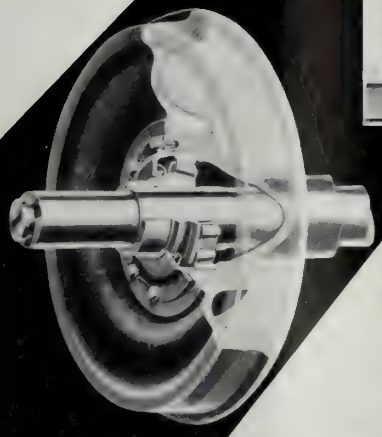
There is no dignity quite so impressive and no independence quite so important as living within your means.—*Calvin Coolidge.*

It is one of the great blessings of life that all unhappy conditions and circumstances do cease to obtrude themselves in due time. Only good is to be regarded as a permanency.









heavy loads

Roller Bearings mounted within the wheel hubs—the American Steel Foundries Roller Bearing Units—may be found in use in the locations checked on the accompanying pictures. In this service both horizontal and vertical loads are applied with suddenness and severity really trying the capacity of the bearings and their mountings—

Roller Bearing Units are being more and more widely used.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

The News of the Month

What's Been Going on in Transportation, Railroads, Automotive, Supply, Aviation

In the first six months of 1930 Class 1 roads obtained the greatest efficiency for any corresponding period on record in the use of fuel by road locomotives, according to reports filed by the railroads with the Interstate Commerce Commission.

An average of 125 pounds of fuel was required during the first six months of 1930 to haul 1,000 tons of freight and equipment, including locomotive and tender, one mile, the lowest ever attained since the compilation of these reports began in 1918. It was a reduction of four pounds under the best previous record established in the first half of 1929.

Record efficiency also marked the use of fuel in the passenger service in the first six months of 1930, an average of 15 pounds having been required to move each passenger train car one mile compared with 15.3 pounds in the first six months in 1929.

Class I roads, in the first half of 1930, used for road locomotive fuel 50,916,925 tons of coal and 1,189,018,040 gallons of fuel oil.

Grain Rate Changes Are Postponed

Revision of grain rates, ordered for October 1 by the Interstate Commerce Commission, has been postponed until January 1. A general revision of grain rates in the West and for exports was prescribed by the commission last July after an investigation lasting more than a year. The revision was in general a decrease. The investigation was initiated under the Hoch-Smith resolution.

Burlington Doing Well

The Burlington is making a considerably better showing this year than either of its joint owners, the Great Northern and Northern Pacific Railways. Burlington's June net operating income was the best for that month in any year since 1926; while both of the Northerns reported the smallest earnings for any June in five years. In July the volume of traffic on the Burlington held up better than that on the two Northerns. Grain loadings on the Burlington in July were particularly impressive, gaining more than 25 per cent for the month over last year.

Lackawanna Orders Rail

The Lackawanna has ordered 2,500 tons of steel rail from the Bethlehem Steel Company for October delivery. Two thousand tons of this will be 130 lb. section, and 500 tons of 105 lb. section. This rail will be rolled at the Lackawanna plant in Buffalo.

Lackawanna Electric Service Begins

The Lackawanna established electric operation between Hoboken and Montclair, N. J., Sept. 3 by running a ten-car train carrying company officers and about 300 guests, including Thomas A. Edison. Other electric trains followed during the day in regular service, and others will be added until steam power will no longer be used on that division.

Electric service on the Lackawanna covers 70 miles of road or 160 miles of track. Operation will begin by the end of the present month to South Orange and Morristown, and by the end of the year to Dover, Bernardsville and Gladstone.

It Wouldn't Do Over Here

While American railroads continue to spend millions yearly for safety devices and educational work to prevent grade crossing accidents, the supreme court of Japan has approached a solution of the problem from an altogether different angle, according to word received by J. E. Newman, claims attorney for the Southern Pacific Company.

"In the future," it is reported in a recent issue of the Japan Advertiser, published in Tokio, "the motorist who races trains to crossings will do so at his own risk. His heirs will have no claim on any railway company, public or private, if his temerity sends him on a journey he had not expected to take so immediately.

"The new ruling," the article continues, "is a recognition of the fact that this is an age of speed and that the country will be benefited more by faster train schedules than by preserving the lives of idiots who race trains to crossings."

"This is rather a cruel view of the situation," said Newman in calling attention to the findings of the Japanese high tribunal, "but it probably will have the effect of cutting down grade crossing accidents materially in Japan.

"In the United States the careless motorist, if he survives a crash with a train, too often disclaims all responsibility for the accident in spite of Stop, Look and Listen warnings, wig-wags, alarm bells, crossing gates and human watchmen. More and more, railroads are being compelled to protect their interests and property by filing damage suits against motorists who drive into their trains or cause crossing accidents by failing to observe the simplest rules of caution."

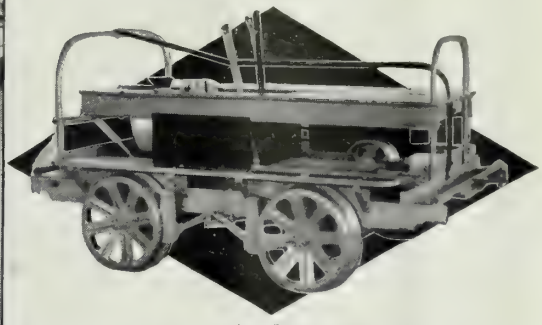
A Slump in Net Income

Reports to the Bureau of Railway Economics from 171 Class 1 lines representing 242,679 miles, show that in

ACHIEVEMENT

The Newark Bay Bridge, One of the Longest Four-Track Railroad Bridges in the World

Spanning mighty bodies of water, boring its way through mountain chains, beating its way through the wilderness—the triumphant march of the railroad track is never stayed until the goal is reached. Achievement after achievement . . . in one of the most stirring epics in American history.



A2—Heavy Duty Section Car
6-11 H. P.—Steel Girder Frame
Seats 12 Men

Achievement, no matter how spectacular, is based on knowledge, carefully weighed and patiently applied. In motor cars, for instance, no achievement is so remarkable as this: One manufacturer made more than half the motor cars now in service! Fairmont.

To be proclaimed Leader in such a highly competitive field is indeed an achievement. But, here, again, knowledge and research were behind it—applied toward the lowering of maintenance costs. That Fairmont engineering has attained this goal and established records of Lowest Over-All Cost is known throughout the Railroad World. Evidenced by the preference shown above.

For efficiency and economy, put Fairmont Railway Motor Cars to work.

FAIRMONT RAILWAY MOTORS, INC.

FAIRMONT, MINNESOTA, U. S. A.

General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO

District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans

FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles and safety appliances

Fairmont Mudge — Performance on the Job Counts

THE · RAILROAD · WORLD · KNOWS · FAIRMONT

the first seven months of 1930 they had a net railway operating income of $458,943,343, which was at the annual rate of return of 3.64 per cent on their property investment. In the seven months of 1929, their net railway operating income was $686,391,088 or 5.56 per cent on their property investment.

Gross operating revenues for the first seven months of 1930 totaled $3,148,700,980 compared with $3,626,465,518 for the same period last year or a decrease of 13.2 per cent. Operating expenses for the first seven months of 1930 amounted to $2,405,088,119 compared with $2,638,986,808 for the same period one year ago, a decrease of 8.9 per cent. Class I roads in the first seven months of 1930 paid $213,064,188 in taxes, compared with $232,520,016 for the same period last year, a decrease of 8.4 per cent. For July alone, the tax bill of the Class I roads amounted to $31,658,421, a decrease of $3,665,503 under July of 1929.

Twenty-four Class I railroads operated at a loss in the seven months of 1930, of which seven were in the eastern, three in the southern and 14 in the western district.

Net operating income in July was $82,750,153, at the yearly rate of return of 3.76 per cent. July, 1929, it was $123,824,669 or 5.76 per cent.

Air Competition Grows

T.-A.-T.-Maddux Air Lines' western division, comprising California, Arizona and New Mexico, handled 3,132 passengers in August, a record month. H. W. Beck, traffic manager, reports that the entire system handled 24,995 passengers in six months ended June 30, 1930. For the week-end, including Labor Day, the western division created a new record of 647 passengers in four days. On August 29, 143 passengers were carried, Saturday, 159; Sunday, 139, and Monday, 206.

With the Same Fire, 30 Days, 9700 Miles

Engine 4213, one of 20 delivered by the Baldwin Locomotive Works to the St. Louis-San Francisco Ry., completed at Kansas City August 31 a world-record run of 9700 miles under continuous fire. The run was between Kansas City and Birmingham, 737 miles, in about 750 hours.

Handled as a fast northbound and southbound freight, No. 4213 made its full tonnage over the entire period, and not once during the entire test was there a minute's delay on account of the locomotive. Eighty crews were used during the month. The largest tonnage was on August 25, when the engine pulled 115 cars, or 5,025 tons, Fort Scott to Kansas City.

D. L. Forsythe, general road foreman of equipment, was in charge of the endurance run, and rode the engine during the entire time with the exception of 400 miles.

"This run was made for three reasons," he said at the completion of the run. "First, to see whether a freight locomotive could be run 30 days without the flues stopping up to such an extent as to impair the steaming qualities of the engine; second, to see how long an engine could be run without having the fire knocked and the boiler washed out; third, to see whether the engine would steam as well at the completion of 9,700 miles as it did on the first of the trip.

"The locomotive was in fine condition when we tied up last night. We could have gone on for another 30 days had it not been that we had to tie up for government inspection.

"I believe this record will stand as the world's endurance record, for it is not possible to run an engine without inspection for more that 30 days. The only way it could be passed would be to run on a faster schedule which would show more mileage at the end of the run."

Give the Fireman a Chance

When a fireman crawls out over the tender to measure the water supply he is doing dangerous work just as it was done when locomotives were sensational novelties—gambling with death as men did it in the early days of railroading. One unexpected jerk around a curve and the man goes over the side. The peculiar part of this is that while laws have been enacted making it unnecessary for men to risk their lives between cars, making couplings, and others provide safety for them in various other kinds of work no one in the railroad world seems ever to have thought about the firemen, and the risk they are compelled to face in performing a simple duty which modern invention has made unnecessary. With an accurate, dependable Tender Water Level Indicator, right in front of the engineer or fireman, this risk is removed.

The Economy Tender Water Level Indicator operates on the pneumatic principle. It is positive, and has simple mechanical parts that cannot get out of order or lose their accuracy. The gauge is graduated and indicates positively the correct depth of water in the tender tank. The installation of the Economy Indicator is very simple, and can be made on a locomotive in a few hours. The indicators are made by the Economy Railway Appliance Co. of Montreal.

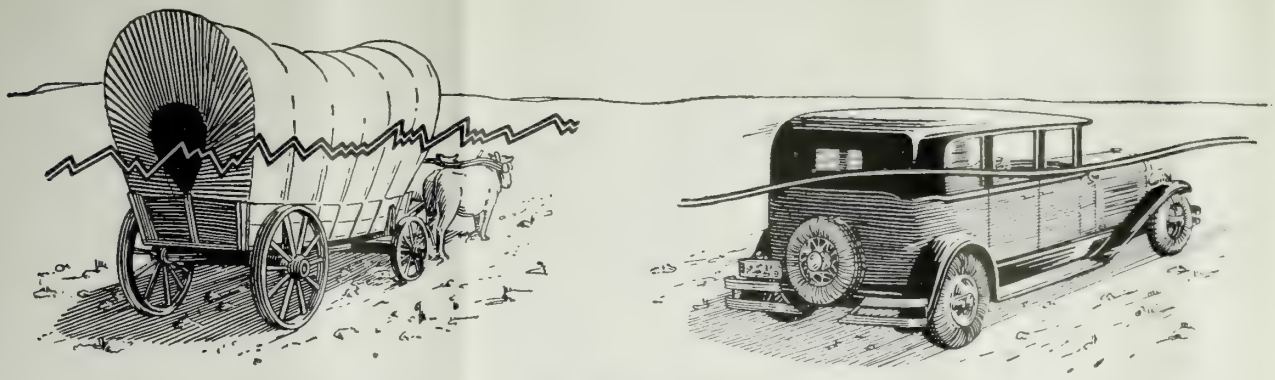
Not So Dull on the Frisco

The St. Louis-San Francisco Railway Company reports that 195 new industries had been located along its rails during the first seven months of 1930, representing a total value of $6,555,000. Thirty-three of this number were located during July. Estimated carlot production of these industries for July was placed at 3,600.

It Has Happened Several Times

Twenty-five persons, including several women and two babies, were stranded in Little Rock, Ark., Aug. 20. Some had gone without food for two days, the result of a bus line owner absconding with fares paid him by the party which left Los Angeles Aug. 11, for Chicago and New York. Their plight was discovered in municipal court, where three drivers were exonerated of charges of operating a bus without a permit, brought by members of the party in an effort to hold the drivers until they obtained refund of fares from the owner of the stage line, who, it was discovered, had left the party in El Paso and absconded into Mexico.

The Bridge Across the Golden Gate, Connecting San Francisco, Marin and the Redwood Empire, California, Will be Similar to the Hudson River Bridge and the Philadelphia-Camden Bridge. It Will be 8500 Feet From Plaza to Plaza. The Center Span Will be 4200 Feet Long. The Bridge Will be 200 Feet Above the Water Line.



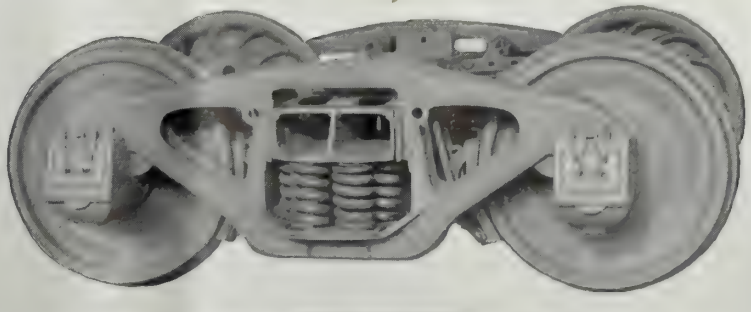
Much of This
Difference in Riding Quality Has Been Given to Freight Cars
by Bettendorf
Dalman-Type
Trucks

The Dalman spring group which gives Bettendorf Dalman-Type trucks ample reserve spring capacity and unusual shock absorbing ability, can now be furnished in a single cluster as illustrated above if desired.

The Dalman feature adds two standard coils to each spring group.

WHEN the covered wagon crossed the prairies, every stone and every chuck hole meant a distinct jar that brought fatigue to the intrepid souls aboard. Today the balloon tired automobile with scientifically designed spring suspension glides along with little thought to the contour of the road.

Much of this progress toward perfect roadability has been conferred upon the freight car by that highest development of freight car truck, the Bettendorf Dalman-Type. Your rolling stock is at its best when cushioned by the generous, scientifically arranged Dalman spring group. The economies inherent in the use of this improved equipment are obvious and considerable.



THE BETTENDORF COMPANY

OFFICES AND WORKS BETTENDORF, IOWA

Loadings Show Some Increase

Revenue freight loadings for the week ended August 23 were 940,549 cars, an increase of 17,726 cars over the preceding week but a reduction of 197,417 cars below the same week in 1929. It also was a decrease of 140,149 cars below the same week in 1928. Miscellaneous freight loading for the week was 367,279 cars, 88,669 cars under the same week in 1929 and 57,455 cars under the same week in 1928. L.C.L. mdse. amounted to 236,423 cars, a decrease of 25,377 cars below the week last year and 20,866 cars below the week in 1928. Coal loading amounted to 152,908 cars, a decrease of 21,876 cars below the same week in 1929 and 20,208 cars below the same week in 1928. Forest products amounted to 41,376 cars, 28,287 cars under the week in 1929 and 25,698 cars under the same week in 1928.

Grain and grain products totaled 57,786 cars, a decrease of 4,045 cars below the week in 1929 but 1,606 cars above the same week in 1928. In the western districts alone, grain and grain products were 42,581 cars, a decrease of 3,353 cars below the same week in 1929.

Live stock loading totaled 21,843 cars, 4,359 cars under the same week in 1929 and 5,110 cars under the week in 1928. In the western districts alone, live stock loading amounted to 16,031 cars, a decrease of 3,631 cars compared with the same week last year.

All districts reported reductions in the total loading of all commodities, compared with the same weeks in 1929 and 1928.

Airplane Parachute Tests Successful

Tests of an airplane parachute designed to enable planes to land safely in case of motor failure, fog, damage to the plane or loss of control, were completed successfully at Detroit, September 2 by the Detroit Aircraft Corpn. On two tests, the pilot, Vance Breese, put the plane into a spin at an altitude of 2500 feet, bringing it down safely with the huge parachute. During the first experiment, the plane landed in a tree with only minor damage under conditions closely approximating those which would be encountered in emergency use. On the second test, the ship landed on the airport, with slight damage to the lower wing and undercarriage. Breese came down with the plane on both flights. The designer of the parachute, James T. Russell, declares that from 50 to 75 per cent of airplane crashes can be avoided through general use of this device. With this apparatus, the pilot pulls the chute release cord when he has difficulty in the air, and the ship automatically is brought to earth without use of the motor or attention to the controls. The pilot chute which opens as soon as the release is pulled, will automatically right the plane from any maneuver before the main 60-foot parachute opens, which checks the speed of descent, and lowers it to the ground at a speed of about 15 miles an hour. At this speed, it is possible for a plane to land in a forest, on mountains or practically anywhere, without serious damage or injury to the occupants. The parachute should bring a plane safely to the ground when opened at any altitude above 300 feet.

The Intermountain Region is Watchful

Enactment of an amendment by Senator Pittman to the long and short-haul section of the Interstate Commerce Act is urged in a statement of W. C. McCarthy, president of the Intermediate Rate Association of Salt Lake City, on file in the senate committee on interstate commerce.

The Pittman amendment proposes to add to the section the words "or on account of water competition through the Panama Canal," the effect of which would be, according to Senator Pittman, that if the railroads ask for a lower rate on any commodity passing through the Panama Canal on account of the competition of the canal, then if that rate is granted to the more distant point the same rate or no greater rate shall be granted to intermediate points.

Locomotives

The reports of carriers filed with the American Railway Association show that new locomotives on order August 1 this year totaled 296 compared with 410 on the same day last year, a decrease of 114. There were placed in service in the first seven months of this year 484 new locomotives compared with 371 in the same period of 1929, an increase of 113; locomotives leased or otherwise acquired are not included in these figures.

Inquiries for equipment since our August issue have been made by the National Railways of Mexico for from one to ten locomotives of the 2-6-6-2 type; and by the Rio Grande do Sul (Brazil) for ten Garratt type locomotives.

Orders for locomotives have recently been reported as having been placed with the American Locomotive Co.: Illinois Steel Co., four 0-4-0; Lehigh Valley, one 4-8-4; New York, New Haven & Hartford, six locomotive tenders; Pickands Mather & Co., one six-wheel switcher.

The Baldwin Locomotive Works reports August shipments of $3,160,000, against $2,525,000 in July and $3,870,000 in August, 1929. Shipments for the first eight months of the year totaled $23,160,000 against $14,100,000. Business booked in August showed an increase amounting to $1,720,000, against $330,000 in July and $870,000 in August, 1929. Unfilled orders September 1 totaled $11,200,000 compared with $14,630,000 a year ago. Recent orders reported placed with this builder are: Chicago Great Western, fifteen 2-10-4; Lehigh Valley, one 4-8-4; Lehigh & New England, three heavy switchers; Northern Natal Navigation Co., Port Natal, S. A., one 2-10-2.

The Pennsylvania is building 12 electric locomotives in its shops at Altoona. These include eight of the road's 0-1 type and two of the P-5 type of passenger locomotives and two L-6 freight locomotives. Two of the 0-1 type have been completed.

Passenger Car

The Atchison, Topeka & Santa Fe is inquiring for ten horse express cars since our August issue. The following equipment has been ordered: Boston & Maine, four de luxe coaches and two combination passenger and baggage cars from Osgood Bradley; Maine Central, five de luxe coaches and two combination baggage and smoking cars from Osgood Bradley; New York Central, 50 milk cars from the Merchants Dispatch.

Freight Cars

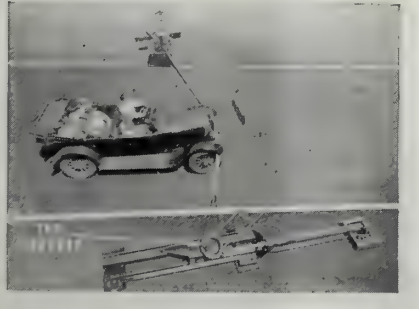
Reports filed with the car service division of the A.R.A. indicate that Class 1 railroads had 438,710 surplus freight cars in good repair and immediately available for service August 14, a decrease of 8,511 cars compared with August 7, when there were 447,221 cars. Surplus coal cars totaled 158,455 on the same date, a decrease of 3,916 within about a week, while surplus box cars totaled 225,357 cars, a decrease of 3,809 for the same period. Reports showed further 25,422 surplus stock cars, a decrease of 1,629 below the number reported August 7, while surplus refrigerator cars totaled 13,184, an increase of 76 for the same period.

Class 1 railroads in the first seven months of 1930 placed 55,660 new freight cars in service. In the same period last year, 42,552 new freight cars were placed in service. Of the new freight cars installed 28,616 were box cars, an increase of 8,069 compared with such installations in the first seven months of 1929. There also were 21,463 new coal cars placed in service in the seven months of this year compared with 14,475 installed during the same period last year. In addition the railroads installed 3,177 flat cars, 1,615 refrigerator cars, 488 stock cars and 301

Nation-wide Grade Separation Is Impractical But...

CROSSING HAZARDS can be removed!

At the moment of contact with the barrier the wire rope gives an even bearing against the car. The snubber has not started to act.



Compare the position of the snubber in this picture with its position in the illustration above. Here the snubber has moved to take up the shock.

GRADE separations, being urged today, would require generations of construction work. At a cost of hundreds of millions of dollars, railroad right-of-ways in many places would practically require rebuilding.

Wide-spread crossing safety to satisfy both railroads and motoring public must be complete as well as economically possible. In THE HIGHWAY GUARDIAN---a positive, yielding crossing safeguard---such protection is provided at a cost that is not prohibitive.

This automatic, yielding barrier removes the hazard at crossings by forcibly keeping vehicles off the tracks. If, through carelessness or recklessness, it is hit by a machine, a yielding snubber takes up the shock and gradually but surely the vehicle is brought to a stop without damage to the machine or injury to occupants.

Complete protection such as THE HIGHWAY GUARDIAN provides is available at once. Installation is simple, relatively inexpensive and can be made without long delay. The first cost is but a fraction of the expense involved in grade separations, and maintenance is low enough to be considered negligible. Write for details of construction, operation and installation.

The fundamental idea from which THE HIGHWAY GUARDIAN has been developed was the ingenious conception of Mr. Joseph B. Strauss, eminent consulting engineer and builder of many of the world's famous bridges.

FRANKLIN RAILWAY SUPPLY CO., Inc.
New York Chicago San Francisco St. Louis Montreal

THE HIGHWAY GUARDIAN

THE CROSSING GATE THE MOTORIST CANNOT CRASH

miscellaneous cars during the same period of this year.

August 1 of this year the railroads had 19,627 new freight cars on order compared with 36,335 cars on the same day last year, and 14,704 on the same day two years ago.

Since the August issue the following inquiries have been made for freight cars: Carnegie Steel Co., 39 70-ton gondolas, and 38 70-ton flats; Standard Oil Co. of Indiana, seven 50-ton gondolas; Tennessee Copper Co., 50 7,000-gal. tank cars; Western Fruit Express, an additional 100 steel underframes for refrigerator cars.

Recent orders include: American Smelting & Refining, 75 gondolas to Koppel; Jacob Decker & Son, repairs to 50 refrigerator cars to Ryan Car Co.; Elgin, Joliet & Eastern, 300 flat and 250 gondolas to be built in own shops; Great Northern, 100 hopper cars to Canton Car Co.; Haley, Chisholm & Morris, 20 air dump cars to Koppel; Illinois Steel Co.; five steel flat and 105 ingot cars to American Car & Foundry; Lehigh & New England, 300 box and five cabooses to Magor Car Co.; Mather Stock Car Co., 200 stock cars being constructed in their own shops; Mexican Railway, 85 box, 15 automobile and 15 flat to Pressed Steel Car Co.; United States navy department, bureau of supplies and accounts, one steel 50-ton box to American Car & Foundry; Western Fruit Express, 100 steel underframes to Standard Steel Car Co.; repairs to five steel hopper cars to Koppel.

Railway Construction

Tracks & Yards

COLORADO.—The New Mexico Lumber Co. is planning to build a line between McPhee and Terris, about 15 miles.

MEXICO. — The Imperial Petroleum Exploration Co., Tampico, Tam., has bought from the Corona Oil Co., a subsidiary of the Royal Dutch Shell interests, the line from Homo, Tam., to Panuco, Ver. C., 38 miles. It is planned to extend the road from Panuco to El Higo, Ver. C., 32 miles.

MONTANA.—The Montana Power Co. is planning to build a line from a point on the Northern Pacific at Pablo, near Polson, to the site of its new $10,000,000 power plant on the Flathead River, nine miles.

NEVADA.—The Los Angeles & Salt Lake is receiving bids for a branch line from a point on the main line between Bracken and Pierce to a connection with the proposed government railroad at the site of the Boulder Dam, about 22 miles.

OKLAHOMA.—The Frisco Lines has let a contract to Allhands & Davis, Joplin, Mo., to extend its Shamrock branch to an oil refinery near Drumright, three miles, to cost about $120,000.

TEXAS.—Construction by the Burlington of about 110 miles of new line from Childress to Pampa was approved by the Interstate Commerce Commission on condition that the Burlington and Rock Island arrange for joint construction and operation of a line between Shamrock and Wellington, and south from Wellington to a point where the Rock Island will connect with the Frisco Lines north of Quanah. This arrangement, eliminating the necessity of two lines between Shamrock and Wellington, is to be submitted to the commission for approval. The construction authorized is to begin about January, 1931.

—The Texas & Pacific Northern has asked permission to build 333 miles of new line in Texas. The proposed line is to extend from a point near Big Spring, Howard county, to a point near Vega, Oldham county, 232 miles, from a connection with this line in Terry county to Lubbock, 46 miles, and from a connection with the first line near Dimmitt to Amarillo, 55 miles.

—The Warren Central has asked permission to build a line from a point near Hockley to Katy, 15 miles, to serve a salt mine and gypsum deposits.

Buildings & Structures

ARIZONA. — Tucson. The Southern Pacific has let a contract to Robert E. McKee, El Paso, for a sanitarium to cost about $135,000.

ILLINOIS. — East St. Louis. The Terminal R.R. Association of St. Louis has permission to build three east side approaches to the St. Louis municipal bridge, and a union passenger station at Railroad and South Main streets, to cost $700,000.

—Decatur. The Wabash has let a contract to Jerome A. Moss, Inc., Chicago, for an addition to the enginehouse, and a wash and locker building to cost $100,000.

—South Chicago. The Chesapeake & Ohio has let a contract to the M. A. Long Co., Baltimore, for an addition to its Calumet elevator "A" at 103rd street and Calumet River, to cost about $300,000.

—Galesburg. The Burlington has let a contract to the Roberts & Schaefer Co. for an "N. & W." type electric cinder plant.

—Chicago. The Chicago & North Western has let a contract to the Adams Construction Co., Chicago, for an inbound and outbound freight station, west of Orleans street on the north bank of the Chicago River, to cost about $125,000.

MINNESOTA.—Duluth. The Northern Pacific has let a contract to George H. Lounsbury & Son, Duluth, for an extension to the enginehouse here to cost about $42,000.

MISSOURI.—St. Louis. The Terminal R.R. Association of St. Louis has let a contract to the Excavating Co., St. Louis, for excavating the site of the proposed Merchandise Mart. A contract has been let to the Smith & Brennan Concrete Pile Co., St. Louis, for 6,000 piles to cost about $225,000.

NEBRASKA.—Hastings. The Union Pacific has let a contract to the Roberts & Schaefer Co. for an "N. & W." type electric cinder plant.

NEW YORK.—Angola. The Nickel Plate has let a contract to the H. E. Culbertson Co. for the substructure and grading for a bridge at this point to cost $120,000. A contract for the superstructure has been let to the American Bridge Co. at a cost of $58,000.

—Buffalo. The Erie and the Nickel Plate have let a contract to J. W. Cowper, Inc., Buffalo, for a produce terminal and market at Clinton street and Bailey avenue, to cost about $1,000,000.

OHIO.—Cleveland. The Nickel Plate has let a contract to the Marsh Hart Co. for the substructure of a bridge at Woodland avenue to cost about $94,000. A contract for the superstructure has been let to the Bethlehem Steel Co. at a cost of $57,000.

PENNSYLVANIA. — Pittsburgh. The Baltimore & Ohio has let a contract to the Ellington-Miller Co., Chicago, for a freight terminal to be used by the Universal Carloading & Distributing Co., to cost about $100,000.

WEST VIRGINIA.—Jacksonburg. The Baltimore & Ohio has let a contract to the Pittsburgh-Des Moines Steel Co., Pittsburgh, for a water treating plant here.

WYOMING.—Cheyenne. The Union Pacific has let a contract to the Utah Construction Co., Ogden, for grading a classification yard, and for the substructure of a 12-track bridge over Crow Creek. The yard proper and the substructure of the bridge will cost about $1,860,000.

Through Fire and Flood

IN 1911-1912 the C. B. & Q. office building in Chicago was wired from bottom to top with OKONITE. Ten years later the top six stories were gutted by fire and the lower floors deluged with water, but the OKONITE-wired circuits on the lower floors, even though submerged in water, were used without difficulty. In spite of this abuse and another eight years of service since 1922, this original OKONITE on the lower floors is still functioning perfectly, after almost twenty years.

That is service!

Recently, in a spirit of investigation, we removed some of the wire from the conduits over the boiler room and found it still in perfect condition. Due to heat and moisture the conduits had almost rusted through from the inside. The OKONITE came out covered with a coat of rust. But the insulation still tests 'way above any standard requirements and promises to be good for at least another twenty years of use.

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Okonite Insulated Wires and Cables

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OKONITE-CALLENDER PRODUCTS

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Factories: Passaic, N. J. Paterson, N. J.

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F. D. Lawrence Electric Co., Cincinnati, O.

Canadian Representatives: Engineering Materials, Limited, Montreal

Cuban Representatives: Victor G. Mendoza Co., Havana

Changes in Personnel

Executive & Operating

James E. Craver, general superintendent, Northern Pacific lines west of Paradise, Mont., has been appointed general manager of the western lines with headquarters as before at Seattle, succeeding **Thomas H. Lantry,** deceased. **W. H. Strachan,** general superintendent, lines east of Mandan, N. D., has been appointed assistant general manager of the lines east of Helena and Butte, with headquarters as before at St. Paul. **T. F. Lowry,** general superintendent of the lines between Mandan and Paradise, has been appointed assistant general manager of the lines west of Helena and Butte, with headquarters at Seattle. Three general superintendents' districts have been abolished and consolidated into lines east and lines west of Helena and Butte. **C. T. Sponsel,** assistant to general superintendent at St. Paul, has been appointed assistant superintendent of the Lake Superior division with headquarters at Duluth, succeeding **W. D. Pearce,** appointed assistant superintendent with headquarters at St. Paul, succeeding **J. B. McLane,** retired.

C. J. Stephenson, assistant general manager of the second district of the Frisco Lines, has been appointed assistant to the general manager with headquarters as before at Springfield, Mo. The jurisdiction of **M. M. Sisson,** assistant general manager of the first district with headquarters at Springfield, has been extended to include the second district. **W. H. Bevans,** superintendent of the northern division at Fort Scott, Kan., has returned from a leave of absence. **E. E. Carter,** acting superintendent, has been assigned to other duties.

L. C. Fritch, vice president, Rock Island Lines at Chicago, has been elected president also of the Denver Union Terminal for the ensuing year, succeeding **J. S. Pyeatt,** president of the Denver & Rio Grande Western, who has been elected vice president.

Albert E. Clift, president of the Central of Georgia with headquarters at Savannah, has been elected president also of the Wrightsville & Tennille, the Wadley Southern, the Louisville & Wadley, the Sylvania Central and the Short Lines Motor Transport.

Horace Johnson, president and general manager of the Duluth & Iron Range with headquarters at Duluth, has retired after 53 years of railway service, 42 of which have been with that railroad.

W. Frank Knox, receiver and president of the Gulf, Texas & Western with headquarters at Dallas, has been elected vice president of the Frisco Lines, of which the former road is now a part.

Charles E. Carlson, first vice president, Duluth, Missabe & Northern, has been elected president, succeeding **William A. McGonagle,** deceased. **E. H. Dresser,** chief engineer with headquarters at Duluth, has been elected vice president also, to succeed Mr. Carlson.

The Santa Fe announces the following changes in the operating department: **C. E. Smyer,** superintendent of the Arkansas River division with headquarters at La Junta, has been transferred to the Colorado division with headquarters at Pueblo, succeeding **H. A. Tice,** appointed special representative of the general manager of the western lines at Pueblo. The Arkansas River division has been consolidated with the Colorado division. **B. A. West,** superintendent of the Rio Grande division, has been appointed assistant superintendent of the New Mexico division with headquarters as before at Albuquerque. This appointment is in connection with the consolidation of the Rio Grande division and the New Mexico division of which **H. R. McKee** is superintendent with headquarters at Las Vegas, N. M.

D. E. Rossiter, general superintendent of the Milwaukee with headquarters at Butte, has been appointed superintendent of the Idaho division. The position of general superintendent at Butte has been abolished. Mr. Rossiter succeeds **N. H. Fuller,** transferred to the Northern Montana division with headquarters at Lewistown, succeeding **A. C. Bowen,** assigned to other duties. The Olympic division has been combined with the coast division under the jurisdiction of **F. E. Devlin,** superintendent at Tacoma.

J. M. MacArthur, superintendent of the Medicine Hat division of the Canadian Pacific at Medicine Hat, has been transferred to the Regina division with headquarters at Regina, Sask., succeeding **J. H. Chown,** transferred to the Edmonton division with headquarters at Edmonton, Alta. Mr. Chown succeeds **G. J. Fox,** transferred to the Medicine Hat division, succeeding Mr. MacArthur. **J. M. Fryers,** assistant superintendent on the Saskatchewan district at Wynyard, has been transferred to the Manitoba district at Minnedosa, succeeding **S. R. Lamb,** transferred to Wynyard.

The Wabash announces that the jurisdiction of **E. A. Sollitt,** general superintendent of the eastern district at St. Louis, has been extended over the entire system. The position of general superintendent at St. Louis has been abolished and **W. W. Greenland** has been appointed superintendent of the western division with headquarters at Moberly, Mo., succeeding **R. A. Messmore,** transferred to the Springfield division with headquarters at Springfield, Ill. Mr. Messmore succeeds **H. O. Lelley,** transferred to the Peru division with headquarters at Peru, Ind.

A. R. Taylor, inspector of transportation of the Missouri Pacific Lines, has been appointed assistant general superintendent of transportation with headquarters at St. Louis.

W. J. McWhorter, superintendent of the Nashville division of the Nashville, Chattanooga & St. Louis with headquarters at Nashville, has been appointed superintendent of the Paducah & Memphis division also, succeeding **W. J. Hills,** appointed general agent in the transportation department with headquarters at Paducah, Ky.

The headquarters of the following officers of the operating department of the Seaboard Air Line have been transferrd from Savannah, Ga., to the general office building at Norfolk, Va.: **E. C. Bagwell,** general manager; **W. G. Slaughter,** chief special agent; **J. C. Wroton,** general superintendent transportation; **C. E. Hix,** superintendent transportation; **W. F. Williams,** superintendent telegraph; **E. Y. Graves,** superintendent stations and transfers; **C. S. Patton,** general superintendent motive power; **W. C. Kirby,** general superintendent yards and terminals; **C. D. Thornton,** supervisor rules; **W. W. Fuller,** safety supervisor.

Charles A. Manthe, terminal trainmaster on the Great Northern at Seattle, has been appointed superintendent of the Klamath Falls division with headquarters at Klamath Falls, Ore.

Financial & Legal

W. C. Askew, treasurer of the Central of Georgia at Savannah, will retire November 1, after 49 years in the service of that road. He will be succeeded by **C. F. Groves,** secretary. Mr. Groves will act as secretary and treasurer.

Oliver E. Sweet, assistant attorney in the bureau of valuation of the Interstate Commerce Commission, and formerly assistant attorney general for South Dakota, has been appointed director of finance for the commission, succeeding **C. D. Mahaffie.**

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CF Type
Boiler
Feed Pump

The Elesco Heater Showing Tubes Partly Withdrawn.

Feed Water Heating Makes the Boiler BIGGER

ONE of the fundamental reasons for the application of feed water heaters is to give the boiler greater sustained capacity.

This capacity can be had at higher cost by increasing boiler size and fuel consumption, but the Elesco feed water heater adds at least 15 per cent to sustained boiler capacity without a corresponding increase in weight and with no additional fuel.

This 15 per cent increase in boiler capacity means more tonnage hauled; more transportation revenue per dollar of operating expense.

The cost is mighty small compared with the permanent increase in earning capacity that feed water heating brings.

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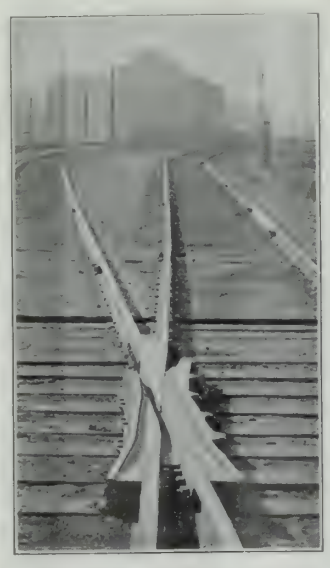
SPRING FROGS



SHOWING SPRING FROG IN SERVICE

Are giving excellent service under severe traffic conditions on Railroads using them.

Twenty years successful service by CONLEY TYPE FROGS have demonstrated their merit for safe and economical service.

CONLEY FROG & SWITCH CO.

Memphis, Tenn.

Charles Franklin, general attorney of the Southern Pacific at New York for more than 25 years, has resigned to engage in private practice.

Herbert Fitzpatrick, vice president and general counsel of the Chesapeake & Ohio with headquarters at Cleveland, has been appointed vice president, law and corporate relations of the Missouri Pacific and of the Texas & Pacific.

F. J. Schillinger, assistant freight claim agent of the Wabash at St. Louis, has been appointed freight claim agent with the same headquarters, succeeding **L. L. Shepard,** assigned to other duties.

Purchases & Stores

C. J. Irwin, division storekeeper on the Gulf, Colorado & Santa Fe at Temple, Tex., has been appointed purchasing agent and storekeeper with headquarters at Cleburne, Tex., succeeding **E. S. Newton,** deceased. **H. W. Hughes,** chief clerk in the purchasing department at Cleburne, succeeds Mr. Irwin.

H. C. Youngs, lumber buyer for the Milwaukee with headquarters at Chicago, has been appointed tie and timber agent with the same headquarters, succeeding **F. S. Pooler,** retired.

Traffic

F. P. Kinney, general freight agent of the New Haven Lines with headquarters at New Haven, Conn., has been appointed freight traffic manager, succeeding **George M. Wood,** retired. **W. J. Landon,** assistant general freight agent and commerce assistant, succeeds Mr. Kinney.

The Louisiana & Arkansas Lines has appointed **W. C. Clark** assistant traffic manager with headquarters at Shreveport, La.

W. I. Lightfoot, general passenger agent of the Nashville, Chattanooga & St. Louis with headquarters at Nashville, has been appointed general passenger agent of the Louisville & Nashville with headquarters at Louisville, succeeding **Robert D. Pusey,** deceased. **John F. Gaffney, Jr.,** assistant general passenger agent, succeeds Mr. Lightfoot.

L. A. Sackbauer, assistant general freight agent of the Missouri Pacific, has been appointed assistant coal traffic manager with headquarters as before at St. Louis. **J. R. Staley** succeeds Mr. Sackbauer.

H. L. Pigott, assistant general passenger agent of the Wabash with headquarters at St. Louis, has been transferred to Chicago, succeeding **J. Maloney,** resigned.

Mechanical

W. E. Harmison, master mechanic of the Erie at Meadville, Pa., has been appointed district master mechanic, New York district, with headquarters at Secaucus, N. J., succeeding **George Thibaut,** transferred to Port Jervis, N. Y. Mr. Thibaut succeeds **E. Pool,** master mechanic, transferred to Marion, Ohio. **G. E. Lund,** master mechanic at Marion, has been transferred to Meadville to succeed Mr. Harmison.

William L. Kinsell has been appointed superintendent motive power and equipment of the Alaska Railroad with headquarters at Anchorage.

The Burlington announces that **W. A. Kelly,** assistant master mechanic, Ottumwa, Iowa, has retired at his own request after fifty years' continuous service. The position of assistant master mechanic at Ottumwa has been abolished.

J. W. Jackson, division master mechanic on the Alberta district of the Canadian Pacific at Edmonton, Alta., has been transferred to Medicine Hat, Alta., replacing **D. M. Smith,** transferred to Edmonton.

The headquarters of **A. H. Beirne,** master mechanic of the New Mexico division of the Santa Fe Lines, has been transferred from Raton to Albuquerque. **J. P. McMurray,** master mechanic of the Rio Grande division, which has been consolidated with the New Mexico division, has been appointed assistant master mechanic of the latter division with headquarters at El Paso.

Civil

The Milwaukee announces the following changes in the engineering department: **W. F. McDonald,** division engineer of the Spokane division, has been appointed assistant engineer, maintenance of way, lines west of Mobridge, S. D., succeeding **J. F. Pinson,** assigned to other duties; **C. J. Swane,** division engineer, Northern Montana division at Lewistown, Mont., has been transferred to Milwaukee, replacing **C. F. Allen,** assigned to other duties; the Northern Montana division and the Rocky Mountain division have been consolidated and the jurisdiction of **D. C. Rhynsburger,** division engineer of the latter, has been extended over both divisions; **L. R. Boettcher,** division engineer of the Wisconsin Valley division, has been transferred to the Racine & Southwestern division with headquarters at Beloit, Wis., replacing **C. Holland,** assigned to other duties; the Wisconsin Valley division and the La Crosse division have been consolidated and the jurisdiction of **G. K. Farner,** division engineer of the latter, has been extended over both divisions; **F. R. King,** formerly division engineer at Portage, Wis., has returned from a leave of absence and has been appointed division engineer at Madison,

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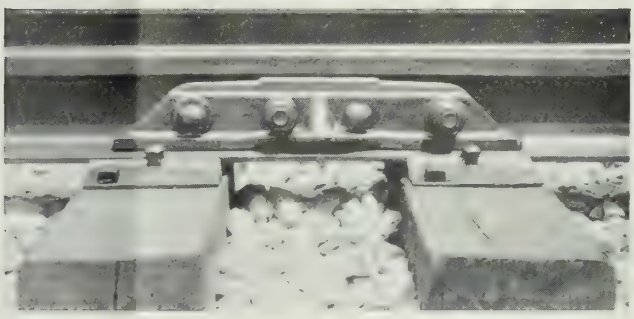
is a development, not merely a new invention and provides the nearest approach to continuous rail.

It is now in use on leading railroads.



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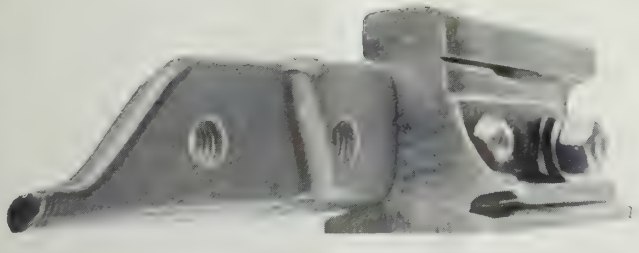


Fig. 1

This view shows one bar cut in center and the opposite bar in full length indicating the solid central portion.

Fig. 2

Section through center showing solid rigid pillow-block formation at center of bars.

Fig. 3

Section through rail looking at end of bars toward center of joint. Note clearance between rail web and bars.

Constant Spring Tension Keeps Bolts Tight

Evertite bars are drop forged producing a live joint, the rail ends are bridged together

STANDARD EQUIPMENTS, INC.

415 Lexington Ave., New York City

Progress demands superior construction

THE grizzled sales manager can spot, at a glance, an extra ante in the swindle sheet. He is reasonable, too, about legitimate expense accounts. In Philadelphia, for instance, he knows that three or four dollars a day will buy a star salesman the comforts of a king . . . Here at the Hotel Pennsylvania, near the trains, but 10 minutes away from the dust and din are garage facilities, unrestricted parking area, good food in the Coffee Shop or main dining room; and a fresh cool river-blown breeze to tone up the travel tired . . . Yes, sir, ... The Pennsylvania is a little more like home. Ask the sales manager . . . he knows.

DANIEL CRAWFORD, Jr., Mgr.

HOTEL PENNSYLVANIA
39TH & CHESTNUT ST. · PHILADELPHIA ·

Wis., succeeding **B. V. Burtch,** assigned to other duties.

K. B. Duncan, district engineer of the Gulf, Colorado & Santa Fe with headquarters at Galveston, has been appointed chief engineer, succeeding **Frank Merritt,** deceased. **W. W. Wilson,** division engineer of the southern division at Temple, succeeds Mr. Duncan.

L. J. Hughes, system engineer maintenance of way of the Rock Island Lines at Chicago, has been appointed engineer maintenance of way of the first district with headquarters at Des Moines, succeeding **A. C. Bradley,** appointed division engineer of the Iowa division at the same point. Mr. Bradley succeeds **W. E. Heimerdinger,** transferred to the Cedar Rapids division. The position of system engineer maintenance of way has been abolished.

The Northern Pacific announces the office of the district engineer at Livingston, Mont., has been abolished. **Frederic J. Taylor,** district engineer at Livingston, has been transferred to St. Paul; **Henry F. Brown,** district engineer at St. Paul, has been appointed assistant district engineer at St. Paul.

T. A. Allan, chief signal inspector in the office of the signal engineer, central region of the Canadian National at Toronto, has been appointed superintendent of signals of the Southern Ontario district with the same headquarters, succeeding **H. L. Black,** appointed superintendent of signals of the Toronto Terminals Railway, a newly created position.

E. R. Parke, division engineer in the office of the chief engineer of the Pennsylvania with headquarters at Philadelphia, has been transferred to the Sunbury division with headquarters at Sunbury, Pa. Mr. Parke succeeds **F. R. Rex,** transferred to the Williamsport division with headquarters at Williamsport, Pa. Mr. Rex succeeds **N. D. Vernon,** transferred to the Elmira division with headquarters at Elmira, N. Y. **D. D. Davis, Jr.,** division engineer at Elmira, succeeds Mr. Parke. **L. B. Young,** division engineer of the Monongahela division at Uniontown, Pa., has been appointed division engineer of the Schuylkill division, a newly created position.

J. A. Noble, division engineer of the Arkansas River division of the Santa Fe Lines at La Junta, has been transferred to the Pecos division at Clovis, N. M. **O. F. Arthur,** division engineer of the Rio Grande division at Albuquerque, has been transferred to the Slaton division of the Panhandle & Santa Fe with headquarters at Slaton, Tex., succeeding L. V. **Lienhard,** appointed assistant division engineer at San Angelo.

The engineering offices of the following officials of the Seaboard Air Line have been transferred from Savannah, Ga., to Norfolk, Va.: **W. D. Faucette,** chief engineer; **J. C. Williams,** engineer of buildings; **J. L. Kirby,** engineer maintenance of way, and **F. H. Bagley,** signal engineer.

James Carey Davis

Obituary

James Carey Davis, advisory operating vice president of the American Steel Foundries, Chicago, died at Mackinac Island, Mich., August 10. Mr. Davis was associated with the Sargent Company in various capacities for 17 years. He became general superintendent of the Leighton & Howard Steel Co., St. Louis, in 1901. When these two companies were absorbed by the American Steel Foundries in 1902, Mr. Davis was appointed western district manager In 1905 he was appointed assistant to the first vice president in charge of operations at Chicago. He was elected fourth vice president in charge of foundry operations in 1912 and held this position until 1929 when he was elected advisory operating vice president.

Edmond D. Bronner, vice president of the Michigan Central, died at his home in Detroit, September 1, aged 71. Mr. Bronner was born in Buffalo, N. Y. He was a graduate of the United States Naval Academy, started his railroad career as a draftsman in the car department of the Canadian Southern (now a part of the Michigan Central) at St. Thomas, Ont., in 1890, and after a series of promotions became general manager in 1912, and vice president in 1920.

Frederick L. Wanklyn, retired general executive assistant of the Canadian Pacific, died at Grimbsy, England, August 3, aged 70.

W. L. Robinson, superintendent of fuel and locomotive performance of the

THE RALSTON STEEL CAR COMPANY

COLUMBUS, OHIO

ANNUAL CAPACITY
12,000 FREIGHT CARS

50 TON STEEL GONDOLA CAR WITH WOODEN FLOOR FOR PERE MARQUETTE

BUILDERS OF FREIGHT TRAIN CARS SINCE 1903

Baltimore & Ohio, a former president of the International Railway Fuel Association, died unexpectedly at his home in Jessup, Md., August 7, aged 46. Mr. Robinson was born in Danville, Va. He was graduated from Purdue University in 1904 and entered the service of the Baltimore & Ohio as a special apprentice in the Mt. Clare shops.

James Henry Redan Parsons, vice president and general manager of the Louisiana lines of the Southern Pacific from 1919 to 1923, and long associated with the passenger traffic of these lines, died at his home in San Francisco, August 13, aged 69. Mr Parsons retired as passenger traffic manager in 1925 because of ill health.

Edward B. Stahlman, formerly a vice president of the Louisville, New Albany & Chicago (now part of the Chicago, Indianapolis & Louisville) and traffic manager of the Louisville & Nashville, died at Nashville, August 12, aged 87.

S. W. Brown, retired general superintendent and assistant to the general manager of the Michigan Central, died at his home in Detroit, August 31, aged 72.

Charles Molony, president and general manager of the Wrightsville & Tennille R.R., with headquarters at Savannah, Ga., died in that city, August 2, aged 59.

Frank Merritt, for the past 21 years chief engineer of the Gulf, Colorado & Santa Fe with headquarters at Galveston, died in that city August 3, aged 74.

John M. Mulholland

S. J. Bratager, retired assistant chief engineer of the Northern Pacific, died in St. Paul, August 29, aged 70.

James J. Connelly, for many years superintendent of the Montreal division of the Canadian National Railways, died at St. Lambert, Que., August 21, aged 57.

Harry C. A. Maisonville, publicity agent of the Pere Marquette and editor o fthe Pere Marquette Magazine with headquarters at Detroit, died unexpectedly at Tampico, Tamps., Mex., August 20, on a special train carrying a group of American newspapermen to Mexico City.

Supply Trade Notes

The O. F. Jordan Company announce the appointment of **John M. Mulholland** as vice president in charge of sales succeeding **A. L. Greenabaum,** deceased. Mr. Mulholland was born in Pittston, Pa. He studied marine engineering at the University of Michigan. He began his career in 1910 as an apprentice in marine engineering at the Craig Shipbuilding Co., Long Beach, Cal., and later engaged in mining engineering in the Southwest and in Mexico. From 1913 to 1915 he was in South America as mining engineer with the Bolivia Exploration Co. Later he joined the engineering department of the Liquid Carbonic Co. of Chicago. During the war he was assigned to the officers' training school, tank corps, Camp Colt. He was district sales manager of Mudge & Co. from 1919 to 1923, and from 1923 to 1928 he was in the oil equipment business with headquarters at St. Louis and Cleveland. Two years ago he became connected with the sales department of the O. F. Jordan Company.

The Double-track...

Increases the Santa Fe train speed enroute. And by thus removing the interruptions from side tracking on single track lines, the Santa Fe renders an unrivaled transcontinental freight and passenger service between California and Eastern terminals.

The fast, cool and bracing passenger route.

SantaFe

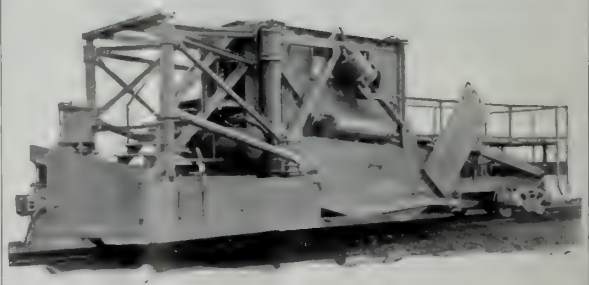
W. J. BLACK
Pass. Traffic Mgr.
Chicago

JAMES B. DUFFY
Asst. Pass. Traffic Mgr.
Los Angeles

608-B

NEW JORDAN TYPE "A" SPREADER-DITCHER

JORDAN SPREADER
"Does the Work of an Army of Men"
SNOW PLOW · ICE CUTTER · UNIVERSAL · STANDARD · DITCHER
O.F. JORDAN COMPANY
EAST CHICAGO, INDIANA



Meets Every Railway Spreading and Ditching Requirement

O. F. JORDAN CO.

East Chicago, Indiana

Walter J. Riley, President

ECONOMY ARCHES ARE MODERN!

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I. Lamont Hughes, vice president of the **United States Steel Corpn.** at New York, has been elected president of the **Carnegie Steel Co.,** Pittsburgh, succeeding **William G. Clyde,** resigned. **Ambrose N. Diehl,** vice president of the Carnegie Steel Co., has resigned to become a vice president of the United States Steel Corpn. with headquarters at New York. **Ralph H. Watson,** general superintendent of the Homestead works of the Carnegie Steel Co., succeeds Mr. Diehl. **Sydney Dillon,** chief mechanical engineer of the Carnegie Steel Co., has been appointed assistant to the vice president.

The Okonite Company, manufacturers of insulated wires and cables, announces the appointment of **Theodore Tomlinson (Ted) Kennedy** as district manager of the Los Angeles office. Mr. Kennedy was born in New York and educated in Virginia. Soon after leaving college he joined the American Expeditionary Forces as a private in the Three Hundred Twenty-eighth Field Artillery. His military service in France brought him a commission. After the war he was employed in an engineering capacity by the Port of Havana Docks Co., Havana, Cuba. In 1924 he joined the Okonite Company at Passaic, N. J. He has been sales representative in the Pacific Coast territory at San Francisco since 1927.

E. H. Weigman, master car builder of the **Kansas City Southern** at Pittsburg, Kan., has resigned and joined the **Grip Nut Co.,** Chicago, as assistant to the vice president, with jurisdiction over all territory west of Chicago. Mr. Weigman was born at DeSoto, Mo., July 29, 1892, and began his railroad career in 1909 as a car repairer on the Louisville & Nashville at East St. Louis. He was employed in the car departments of the Terminal R.R. Association of St. Louis, the Missouri Pacific Lines, the Northern Pacific, and the Great Northern. In 1913 he became traveling representative of the car department of the Atlantic Coast Line. In 1917 he was appointed assistant secretary of the Master Car Builders' and Master Mechanics' Associations, now the mechanical division of the A.R.A. He became supervisor of car repairs of the Louisville & Nashville at Louisville, in 1917. He has been master car builder of the Kansas City Southern since 1925.

The J. G. Brill Co. of Philadelphia announces its affiliation with the **Cummings Car & Coach Co.** of Chicago. **W. J. Cummings,** president of the latter company, has been elected a director and vice president of the J. G. Brill Co. and will have charge of the western division with headquarters in Chicago. **A. P. Jenks,** vice president of the Cummings Car & Coach Co., has been appointed district manager. The Chicago offices of the J. G. Brill Co. will be in the Harris Trust Bldg.

The Sheffield Steel Corpn., Kansas City, has opened an office in Chicago in charge of **Ernest Baxter,** who has been elected vice president of the railroad division.

R. D. Bartlett, vice president of the **Ryan Car Co.,** Chicago, has resigned to become president of the **Waterhouse Equipment Co., Inc.,** Jackson, Miss., distributors of highway and contractors' machinery and supplies.

The Shafer Bearing Corpn., Chicago, has appointed **Victor W. Peterson** president and general manager. Mr. Peterson is president also of the **Hannifin Manufacturing Co.** and the **Sherman-Manson Manufacturing Co.** He succeeds **Julius E. Shafer,** elected vice president in charge of engineering.

The National Battery Co., St. Paul, Minn., has bought the **Gould Storage Battery Co.,** New York.

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Transportation

(Reg. U. S. Patent Office)

The National Monthly
of the Transportation Company

Vol. VII

No. 4

FEATURES *for October,* 1930

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A New and Unusually Fine View of the New York Skyline at Daybreak, Photographed by Cushing for Ewing Galloway.

Engineers Hear Talks of Motive Power of Tomorrow, *Harold A. Smith*

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Nearly 55,000 Employes of Industries Created by the Great Inventor Erect a Magnificent Monument in Granite and Bronze.

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Modern Repair Shops for the Chesapeake & Ohio, *Charles Dillon*

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Little Stories of Big Men, *Department*

The News of the Month.

October Meetings

YEARLY gatherings of outstanding importance this month will be the convention of the Association of Railway Electrical Engineers, Oct. 21 to 24, at the Hotel Sherman, Chicago, and that of the American Railway Bridge & Building Association, Oct. 21 to 23, at the Brown hotel, Louisville.

Both the foregoing meetings will have special exhibits by the respective supply men's associations.

The Railway Fire Protection Association is to meet Oct. 21 to 23 at St. Louis.

Railroad men should be giving some special thought right now to arranging their affairs so that it may be possible to attend the yearly meeting, next month, of the Railway Business Association to be held at the Hotel Commodore, New York.

The National Association of Railroad and Utilities Commissioners is to meet at Charleston, S. C., November 12-15.

The Pacific Railway Club is to do something new next month when its officers are to hold a meeting November 15, at Salt Lake City, at the Newhouse hotel, especially for members in Nevada, Utah, Colorado, and Wyoming who have been unable to attend gatherings in Oakland or San Francisco. The program has not been announced.

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(Formerly, Associated Pub. Co.)

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A. E. HOOVEN, *Vice President*

CHARLES DILLON, *Vice Pres. and M'ng. Editor*
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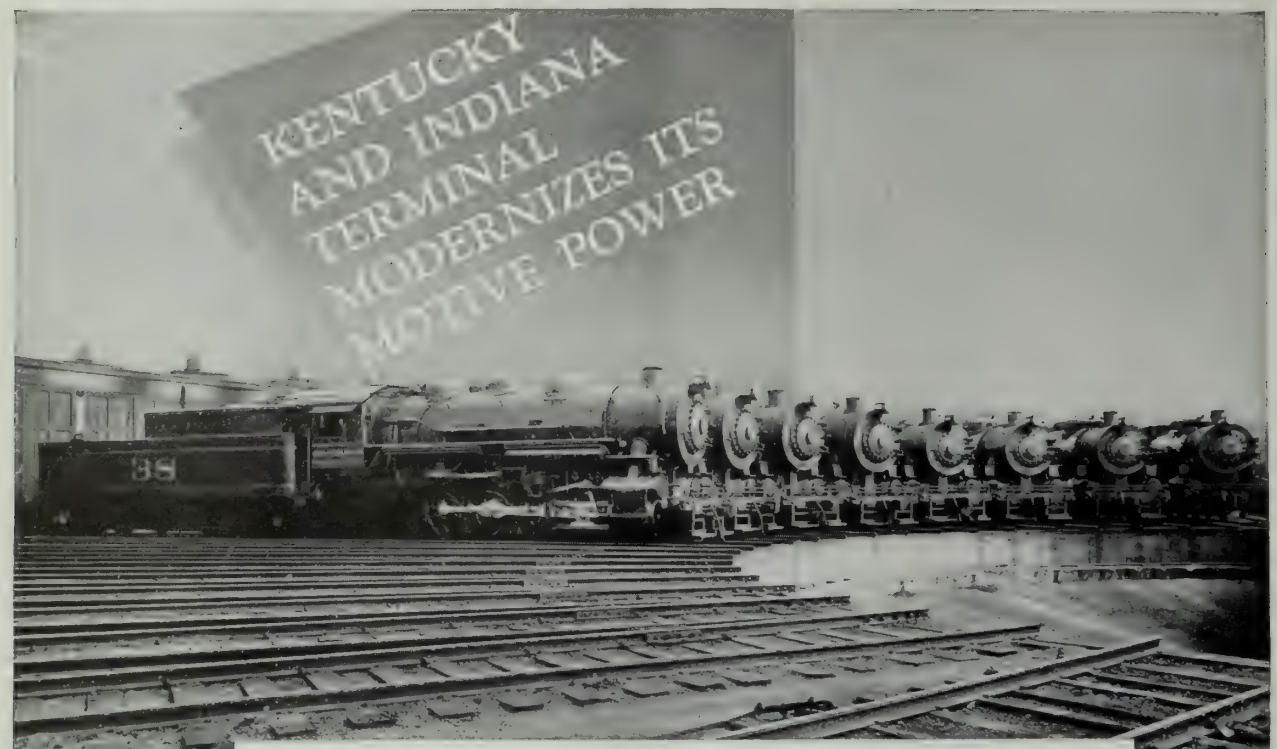


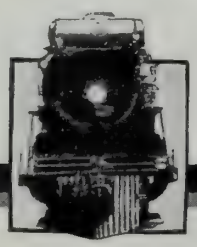
Eight New Lima Switchers Replace Twelve Obsolete Engines . . . .

To maintain the high standard of service to which the industries of Louisville, Ky., were accustomed, the Kentucky and Indiana Terminal Railroad recently replaced twelve obsolete switchers with eight Lima-built engines.

Mr. W. S. Campbell, Manager and Chief Engineer, reports the following results:

> "In checking the number of cars handled, we find that the new engines have improved operating conditions approximately 27 per cent in handling the heavy cuts to and from our connections, breaking up heavy trains in our yards and expediting heavy transfer work between our main yard and auxiliary yards. In addition, they have increased the efficiency of our operations by reason of the large tenders, being able to work through a full shift or assignment without having to stop for water or coal.
>
> "Regarding the consumption of fuel, we are showing a saving of about 25 per cent. In other words, the new engines (with larger cylinders, practically twice as heavy and double tractive effort) are consuming very little more coal than the light engines being retired."

New switching power such as this, quickly justifies its purchase both in operating economies and in improved service.



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The Engineers Hear Talks On Motive Power of Tomorrow

By

Harold A. Smith

Here We See the Locomotive of Yesterday. A Scene on the Baltimore & Ohio Nearly 100 Years Ago. From the Painting by Stitt for that Railroad's History.

ENGINES may come and engines may go, but steam will go on forever, seemed to be the message one went away with after attending the four-day meeting of the Traveling Engineers' Association at the Hotel Sherman in Chicago, the latter part of September. It seems to be the usual thing for the past few years for Chicago always to get up a full head of steam to welcome the traveling engineers, and they sure accomplished results this year. The only thing that marred the meeting was the insufferably hot weather. The engineers met it with a grin, however, recorded a total registration of 1550, and put on a super power program which reached its peak at the Wednesday session. That day was devoted to the subject, "Motive Power of Tomorrow." J. N. Clark of the Southern Pacific was responsible for the program but unfortunately was unable to be at the meeting. A telegram expressing his interest in the work was read as was a letter from R. H. Aishton of the A.R.A., who was unable to be present. Papers on the "Motive Power of Tomorrow" were presented by George H. Houston, president of the Baldwin Locomotive Works; Wm. C. Dickerman, president of the American Locomotive Co.; W. E. Woodard, vice president of the Lima Locomotive Works; Manuel J. Macias of the National Railways of Mexico; T. W. Demarest of the Pennsylvania Railroad; Silas Zwight of the Northern Pacific; George L. Bourne of the Superheater Company; S. G. Down of the Westinghouse Air Brake Co., and John E. Muhlfeld.

Mr. Demarest said that competition would control the future of the railroads as it had the past. The railroads had had to meet first water competition, then the interurban railroad, for passenger and in some cases less than car load freight, then the private automobile, the truck, the motor bus and recently air transportation. The competitive element of the future would be speed, he said, and the railroads must figure that under some conditions they will be obliged to develop their facilities so that they can obtain in passenger service a speed of 90 miles per hour with a thousand-ton train and of from 60 to 65 miles per hour in freight service with a five thousand-ton train. He then pointed out that while this speed could be obtained with electric power the cost of electrification made it prohibitive except under given conditions.

Mr. Woodard in his paper laid special emphasis on the economic possibilities of power as it relates to the entire transportation machine and that in order to secure the maximum net revenue from the money invested in the railroads the locomotive of tomorrow must produce more power. He said:

"Boiled down to the simplest terms, the railway man's job is the application of power to the transportation of passengers and freight. The

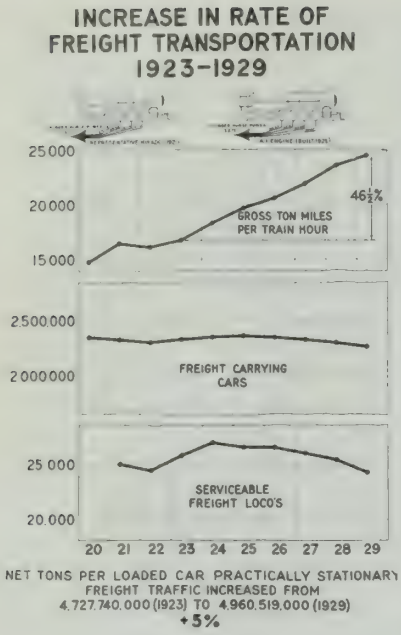


Chart No. 1

entire railway plant, right of way, tracks, bridges, terminals, signals, all the vast railway property, is designed and developed for the purpose of properly applying power to the movement of trains. All these elements are necessary to railway operation they can improve or impair the way power is applied to train movement. But the locomotive is the active factor in the picture, because it is the power-producing element.

"So far, at least, except for special operating conditions, the steam locomotive affords the best and cheapest way of transforming the heat in coal or oil into drawbar pull and speed. Power is the measure of the rate at which drawbar pull is produced and hence its vital bearing upon transportation power output in this sense of the word (as the measure of pull and speed) has shown a remarkable increase in the past few years. Unfortunately, we cannot directly measure the power output of the railways as applied to transportation in the way the power output of a central generating station is measured. However, certain operating data give a close approximation of the relative amounts of power output produced by the railways in the last few years. Moreover, these data show the value of considering the power-producing capacity of locomotives in analyzing railway statistics.

"Chart 1 gives an approximation of the rate of increase in power production by freight locomotive units in 1923 to 1929, inclusive. During these years there was an increase in freight tonnage and revenue of about 5 per cent. The number of serviceable freight locomotives decreased. The number of freight carrying cars slightly decreased and the average loading per car remained about stationary. There is only one way that fewer serviceable locomotives could transport more freight tonnage in practically the same number of cars, each car with slightly less average load; it is a mathematical problem—larger trains moved faster. And this is exactly what happened. The gross ton miles per train hour over this

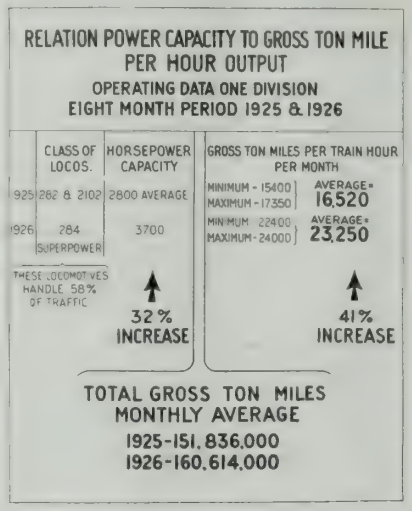


Chart No. 2

period increased 46½ per cent. Better utilization of equipment, both cars and locomotives, and improved train movement played a part in thus increasing the rate at which transportation was conducted, but analysis of individual operations indicates clearly that the increase in power production (actually hauling heavier trains faster) was a major element in the result.

"Again, this period marks the introduction of locomotives with greatly increased power capacity. In the

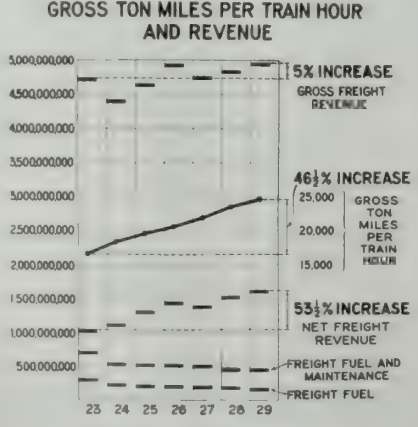


Chart No 3

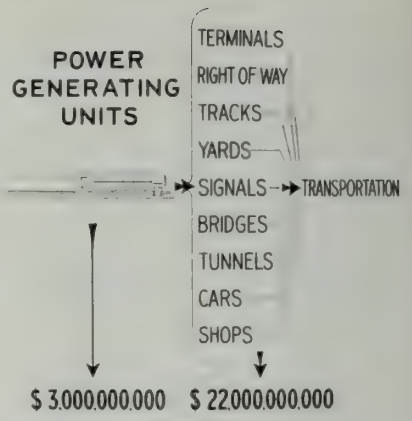


Chart No. 4

upper part of the chart is shown a typical freight locomotive of 1923 and its power capacity. With it is shown a super-power locomotive of 1925 with its power capacity. These two locomotives had almost exactly the same starting tractive power, but not the difference in their power-producing capacity. These are not theoretical figures but dynamometer car results, and they are an excellent example of the value of power-output capacity rather than mere tractive power as a measure of the usefulness of a locomotive unit. In 1929 probably about 10 per cent of the freight locomotives were modern high-power-producing units embodying the general features of this design. Bearing in mind that these units probably were pulling much more than 10 per cent of the freight traffic, the curves show ample justification for the statement that the modern high-power-producing locomotive was beginning to have an important influence in stepping up the rate of transportation.

"The above data, showing the rate of increase in gross ton miles per train hour, is general and cannot be used by railway men or locomotive designers as a guide to what may be expected from a definite increase in power capacity of a particular locomotive design. As power output is such a vital factor in locomotive design and operation, it is important that we establish if possible some relation between locomotive power capacity and gross ton miles per hour output for regular train operating conditions. Data taken upon individual railways, upon which deductions can be based, is now available. From such data, the following general statement can be safely made:

"*The Gross Ton Miles Per Hour Output of a Locomotive or Class of Locomotives Will be Proportional to the Power Producing Capacity of the Unit or Units Involved.*

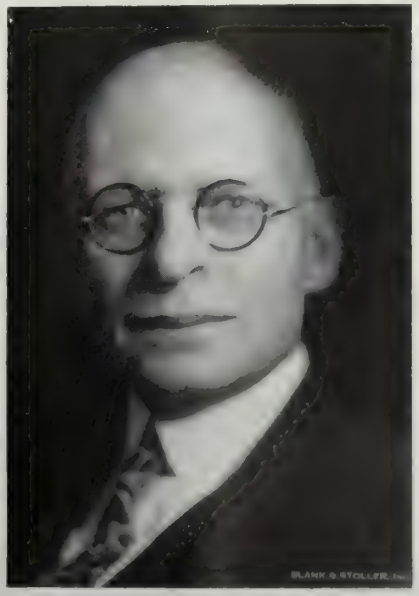
All Banquet Photographs Show Faces in the Foreground Sadly Distorted. This is the Photographer's Fault, and is Not a Reflection on the Speeches. The Engineers' Party Was a Really Joyous Affair, Much Happier Than the Picture Indicates.

"That is, if we put into service on a certain division a group of locomotives having a power-producing capacity of 3700 h.p. per hour, and over a term of months compare their performance with another group having say 2800 h.p. per hour capacity, then the first group will return in regular service at least 32 per cent more gross ton miles per train hour. (This is the percentage of increase in the horsepower capacity).

"As proof of this statement, Chart 2 shows data covering eight months operation on a division of a certain railroad compared with a similar period one year previously. These figures reflect normal operating conditions over a series of months and are not the result of a single test run or a series of test runs. However, the normal operating results have been checked by many test and dynamometer car runs.

"The question may be properly raised whether increasing the rate of transportation as shown by Chart 1 was economical. If, for example, and providing the traffic could have been moved, had the traffic been moved at a slower rate and the operation not speeded up, could not the results have been accomplished more cheaply for the railways? The revenue results for the years under consideration definitely answer this question. The quickening up of transportation was accomplished by very substantial reductions in operating costs.

"In 1923 to 1929, inclusive, the gross freight revenue increased about 5 per cent. In the same period the gross ton miles per train hour increased 46½ per cent. But net freight revenue increased 53½ per cent. This was accompanied by a decrease in freight locomotive fuel and freight locomotive maintenance. While this increase in net can not be definitely and directly attributed by analysis of figures to the increase in locomotive power production, comparison of data on individual divisions like that referred to leaves no question but that increased locomotive power production played a large part in the result (see Chart 3).



William E. Woodard

"What is the bearing of all this data upon future locomotive construction? All developments and improvements must be largely predicated upon study and analysis of present and past operation. The figures presented clearly indicate that higher power production per locomotive unit has played a vital part in speeding up transportation and, at the same time, been at least partly responsible for increasing the net revenue. Studies on individual railroads indicate that it is possible to speed up transportation or increase gross ton miles per hour at least in proportion to the increase in horsepower capacity of the locomotive units. Only about 10 per cent of the locomotives of the country are of the modern high power capacity type. Hence it follows that the logical line of future locomotive development is to design and produce locomotive units having the maximum possible output within the limits of weights and clearances permitted by existing right-of-way and structures.

"Much already has been accomplished in this direction, as shown by a comparison of a typical freight locomotive of 1923, which had a power output of about 600 h.p. per driving

Mountain Type Locomotive Built For the Jamaica Government Railway in 1916. The Two Locomotives on This Order Were the First Mountain Type Locomotives Built by the Baldwin Locomotive Works.

axle, with a modern super-power locomotive having a horsepower output per driving axle of almost 1000. But we have not reached the limit of progress in this direction by any means. As the power output needs of the railways continue to increase, and as they realize more and more the importance of getting all the power possible out of each locomotive unit, further advances will be made by careful designing, coordination of various elements of locomotive design, and the proper proportioning of locomotive parts. The introduction of larger numbers of modern high powered locomotives will unquestionably raise the rate of transportation far above that now prevailing and further reduction in fuel and maintenance will be effected as more and more of these high powered, efficient units are substituted for the older, less powerful and wasteful locomotives. However, this progress is not limited by present locomotive designs, as the limit in power production per driving axle has not been reached. My vision of the steam locomotive of the future is one in which we will attain from 1200 to 1400 horsepower output per driving axle, resulting in still further economies in fuel per unit of work and in maintenance. Such locomotives will be capable of at least 5000 h.p. output for four coupled axles and possibly 6000 to 6500 h.p. output for five coupled axles. They will have more carrying axles to support the boiler and firebox needed to generate this great power. Such progress is strictly in line with the evident trend of transportation needs.

"At the opening of this paper, attention was drawn to the relation of the locomotive, the power-producing factor, to the transportation plant as a whole. A rough analogy is the relation between the boilers and generators of a central power plant to the entire power company's system of buildings, transmission lines, substations, transformers, and distributing lines by which it is possible to apply the power generated in the central station to the various uses of the consumers. All the necessary factors, but the boilers and generators are the vital, active element. So in the railway plant, terminals, right-of-way bridges, tunnels, signals, shops are necessary for the purpose of applying the power generated in the locomotive units to the purpose of transportation. It is just as pertinent for a railroad executive to survey the power capacity of his locomotive as for a similar official of a power company to look into the capacity of his boilers and generators.

"At present the value of Class 1 railway property is about 25 billion dollars. The best estimates place the value of the locomotives between 10 and 15 per cent of the total, nearer 10 per cent than 15; three billion dollars is a fair figure. All the elements represented in the investment contribute in returning net revenue from gross, but the rate at which locomotive units generate power sets a limit upon the earning power of the transportation plant.

"The locomotive of tomorrow will be a machine of increased power. The design should be considered with special reference to power-generating capacity and the efficiency with which the increased power can be produced. Its price should be considered on the power basis, just the same as the generators and boilers of a central power station. Although the investment in power-producing units represents only about 10 to 15 per cent of the total investment, that part of the investment is a most vital element and only by securing locomotive units having the maximum power-producing capacity obtainable within the physical limits of the railroad can the maximum net revenue be returned upon the whole investment."

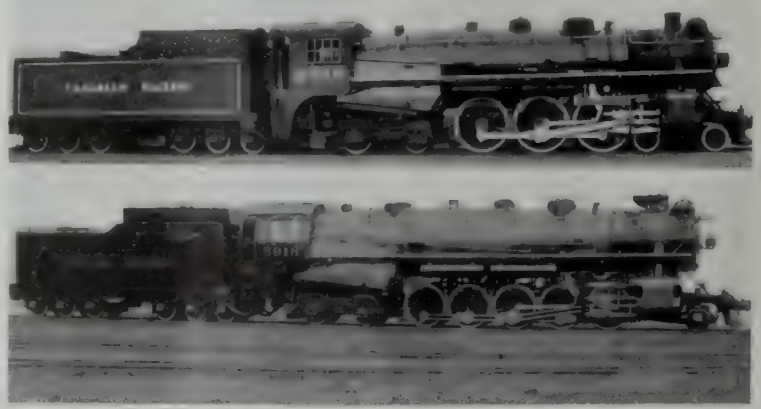
Mr. Houston of the Baldwin Locomotive Works in his address said in part:

"The cost of operating the locomotives of the Class 1 roads of the country, including fuel, lubrication, operating labor and roundhouse service, but excluding repairs, depreciation accruals and retirement charges, reached in 1928 the very great sum of $47,000,000 per annum and is of sufficient importance by itself to warrant every possible effort toward its reduction. This total is made up about as follows:

	Millions
Fuel and electric power	$365
Labor	323
Enginehouse expense	104
Water	25
Maintenance of fuel and water stations	15
Lubricants	8
Miscellaneous supplies	7
Total	$847

"Are the locomotives of the country now being operated at the lowest possible cost as measured by the best results that could be obtained with the best of modern engineering and construction? What is the opportunity for reduction in these operating charges by the replacement of old equipment by new?

"Inasmuch as about 79 per cent of the locomotives of the country are



Some of the Canadian Pacific's Motive Power Turned Out of Longue Pointe in 1929.

more than ten years old and 35 per cent are in excess of 20 years of age, so that few of these can possess the advantages of recent improvements, substantial operating economies are available by the substitution of the best construction of today for much of the old equipment now in use. If the present rate of replacement continues, that is, if by 1940 only 25,000 locomotives have been put into the inventory since 1920 and say 30,000 to 35,000 locomotives then in use are more than 20 years old, the operating economy of the then existing inventory will be so far below the best obtainable from the motive power of the last ten years input that the holders of it will be at a great disadvantage in competition with the railroad which has got rid of its old equipment and is enjoying the benefits of modern motive power.

"The cost of motive power repairs and replacements must be added to the cost of operation to get the full cost of keeping today's motive power on the job. In 1928 repairs to locomotives cost the Class 1 railroads $409,000,000 and depreciation accruals and retirement charges for locomotives were $64,000,000, making a total cost for these items of $473,000,000.

"In this discussion I am not interested in differentiating between the methods of accounting for motive power purchases and retirements, but I am assuming in general that what goes into capital account through the purchase of new equipment ultimately must come out through the accrual of depreciation reserves or through retirement charges from capital account, all of which are taken up as operating expense; and conversely that depreciation accruals and retirement charges thus included in operating expenses make available for replacement purchases the capital thus restored to liquid form. However, I am taking the liberty of discussing the making of replacements out of operating expense, meaning thereby the spending for replacements of sums equal to the total of depreciation accruals and retirement charges included in operating expense.

"In the decade ended with 1919 purchases of new locomotives by Class 1 railroads aggregated 27,184 units, and retirements of old locomotives 16,426 units, resulting in an inventory increase of about 19 per cent and an increase in tractive force of about 59 per cent.

"In the succeeding decade purchases aggregated 12,812 units and retirements 20,765 units, resulting in a reduction in inventory of 11 per cent with, however, a net increase of tractive force for the period of about 10 per cent.

"We do not have either the horsepower or tractive force of the locomotives purchased or retired during these periods, but we do know that the average locomotive purchased during the first decade weighed about 126 tons without tender, so that the total units purchased weighed about 3,425,000 tons; and that during the second decade the average locomotive purchased weighed about 159 tons, without tender, or a total weight of purchases of about 2,034,000 tons. The tractive force per pound of weight did not change materially although the horsepower pound of weight was substantially increased. Measured in dollar value the cost of input was about the same in each period, aggregating about $686,000,000 for each. These figures indicate the rapid growth of the motive power inventory and the rapid input of new motive power in the first period as compared with the practically stationary condition of the inventory with the reduced input of new equipment during the second period.

"Revenue ton miles of freight hauled in the second of the two decades were 28 per cent greater than in the first, and passenger car miles were 12 per cent greater, showing an estimated growth of about 25 per cent in the composite work performed.

"During the first of these periods locomotive repair expense totaled $2,320,000,000 and depreciation accruals and retirement charges aggregated $224,000,000, or a total cost of maintaining the motive power inventory, including its replacement, of $2,544,000,000, or about $254,000,000 per year.

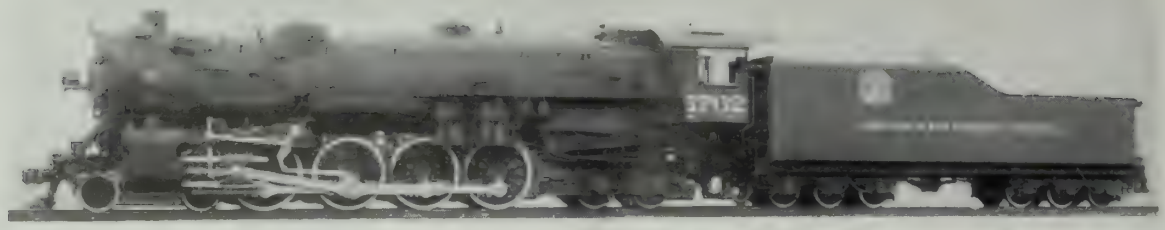
"During the second decade repairs were $4,699,000,000 and depreciation accruals and retirement charges were $533,000,000, or a total cost of maintaining the motive power inventory, including its replacement of $5,232,000,000 or about $523,000,000 per year.

"These expenditures in the second decade increased 106 per cent over those of the first decade. This com-

O. S. Jackson

Silas Zwight

George L. Bourne



One of the Powerful Freight Engines of the Denver & Rio Grande Western Railway.

pares with a decrease of 11 per cent in the number and an increase of 10 per cent in the tractive force of all locomotives existing at the end of 1929 as compared with 1919. It also compares with an increase of 25 per cent in the work performed. What is the cause of this great increase in the cost of keeping this motive power inventory at work, and by what means can this expenditure be reduced? Increases in cost of labor and material account for a portion, but not so much as might at first be assumed, as the first decade included the war years with all their high costs and operating inefficiencies.

"It is self-evident, but susceptible to proof in the case of any individual railroad, that character of service being the same, maintenance is at the minimum with new equipment and increases with the age of the equipment, including, of course, the cost of major repairs and rebuilding and the interest thereon until absorbed into operating costs. Consider the spread in cost of maintenance per unit of effective work done, between a modern high speed locomotive and one twenty years of age trying to do the same task. I am confident that investigation on any road will show the average maintenance on old locomotives, say twenty years or more in use, is so much greater per unit of work performed as compared with the average for locomotives of five years or less of age that if saved by the junking of the old it would go a long way in the succeeding five years toward paying for replacements.

"There is a length of life beyond which it is not economical to maintain any piece of mechanical equipment. The more rapid the change in the character of service to be rendered, the more rapid the change in design by which operating economies are effected in new equipment as compared with existing equipment, the greater will be the obsolescence experienced and the shorter the life that should be permitted. Well-made mechanical equipment effectively maintained will never wear out; therefore the physical life of such equipment cannot be made the measure of its useful life, but its practical obsolescence must be deliberately determined and its replacement effected in the same way as any other operating policy is carried out. This lesson of avoidance of obsolescence by shortening life and thereby lowering maintenance charges has been learned and applied by nearly every user of mechanical equipment in this country and it is of the very essence of American progress in the mechanical arts.

"I contend that the lengthening of life that has been permitted in the motive power of American railroads since 1914, brought about by expensive maintenance of existing motive power, goes far beyond the point of true economy; and that if such motive power were junked much earlier and the maintenance expense thus saved were applied to renewals, a great improvement would result:

1. In the availability of the whole inventory to render the required service.
2. In the operating economy of the individual locomotive.
3. In the cost of maintaining fewer, newer and better built units.
4. In the annual overall cost of motive power to the railroads, including capital charges, interest and operating expenses.

"Put concretely, if $50,000,000 per annum more or less were taken from the maintenance account by earlier junking of old equipment, instead of continuing its maintenance long past its useful life, and were applied through increased depreciation accruals or retirement charges to the purchase of new motive power, it would result in a substantial net reduction in the overall cost of operating the motive power of the country and would provide such an improvement in train operation that the railroads would be substantially ahead on the whole equation and in addition would be more effectively preparing their motive power inventory for tomorrow's needs.

"As opportunity has arisen from time to time, I have discussed this situation with railroad executives, operating officers and motive power engineers, and almost without exception they have acknowledged the facts but have pleaded inability to finance the turnover, or to get the support of the directing forces of their companies. My answer is that little new financing is needed, but rather an adjustment between maintenance expenditures on the one hand and depreciation accruals and retirement charges on the other. Reduce maintenance by junking that which is no longer fitted to its work and use the money thus saved to buy new equipment; and after it is bought apply the further savings in maintenance and operating costs as between the old equipment and the new to buy more new equipment, and you will find your equipment quickly paid for, your motive power inventory vastly improved and your overall cost of motive power reduced."

Mr. Dickerman of the American Locomotive Co. in his address said economic conditions will govern the demand in the future, that in 1929 the Class 1 carriers handled 25 per cent more freight traffic than in 1920 with a decrease in fuel consumption of 10 per cent which indicates that railroad operating efficiency is at its highest, and that motive power units of modern design effect marked savings which can not be ignored, and that while the capacity of the steam locomotive was thought to have been fully reached, even ten or fifteen years ago, no limit has now been set as the eventual. He said that, "Today, the steam locomotive must be highly efficient in the use of fuel; capable of high sustained horsepower; reliable in operation, reasonably low in maintenance costs and available for continuous service over long periods of time," and that, "While many factors have contributed to the excellent results obtained by our railroads during the past few years, not the least has been the installation of a comparatively large number of modern motive power units. Even in the face of gradually decreasing numbers of locomotives in operation, we find that the introduction of these

new units has raised the average tractive power of all locomotives in service by about 19 per cent since 1923. During the past six years, however, there has been very little increase in the aggregate amount of tractive power of steam locomotives in service on the railways of this country. This, in itself, does not tell the whole story. It should be emphasized that the term tractive power does not fully indicate the proper measure of the power of a locomotive. Tractive power simply indicates the maximum power at starting. The measure of a railroad's capacity to move freight is no longer considered to be the maximum train that can be started, but rather the maximum amount of freight that can be moved in the minimum time. This is usually expressed as gross ton miles per train hour. Therefore, the measure of locomotive capacity should be in similar terms. We are now more interested in the horsepower capacity of a given locomotive than in the tractive effort. Two entirely different locomotives may have exactly the same maximum tractive power and yet one may be able to haul 50 per cent more than the other at the prevailing operating speed.

"Many operating officials have realized handsome returns by replacing obsolete power in main line service with well designed and properly balanced units, particularly adapted to the service for which they were ordered.

"Quite recently, one of our large eastern roads purchased some heavy freight locomotives having the same theoretical tractive force and about the same wheel loading as locomotives then in service, but built about 12 years previously. These locomotives were modern in every respect and boiler capacity was one feature of the design that was not overlooked. The new locomotives proved themselves able to increase train loads by 17 per cent, speed between terminals by 34 per cent, and decreased the amount of fuel used per 1000 gross ton miles by 32 per cent. With such economies available in the locomotive of today, there should be no hesitancy on the part of railroad managers to avail themselves of these opportunities of making large reductions in their costs. Locomotive builders are prepared to discuss with the railroads means of financing the purchases of efficient modern locomotives without undue capital expenditure upon the part of the railroad.

"There exists a large field for further marked economies in operation, when one considers that of the total number of steam locomotives now in service on the Class 1 railroads of the United States nearly half are 20 years old or more, and that about 30 per cent are over ten years or less than 20 years of age. A large percentage of these old locomotives are unsuitable for modernizing, so that it leaves the percentage of highly efficient locomotives comparatively low. In this connection, it is interesting to note the favorable action of the Interstate Commerce Commission in granting permission to certain carriers to retire obsolete locomotives, charging the same to profit and loss instead of to operating income."

Mr. Bourne in his paper said:

"The locomotive of tomorrow will, in my opinion, be an engine at least as powerful as our present day locomotive built within the same height and clearance restrictions. It will have a boiler that will overcome the present deficiency in steam space and it will not make necessary the superheater being used, in part, as an annex of the boiler. It will be of such a design as to handle the miscellaneous waters that our railroads have to use in their locomotives. It will operate without boiler water troubles, over longer continuous runs than it does today. It will use steam at as high a temperature and as high a pressure as available materials will permit. It will have a much better cylinder efficiency as a result of greater temperature range and decreased cylinder volume. It will have a greater refinement in machine design and will be maintained at a reasonable cost and with less time out of service. It will, as a whole, I be-

This Is Said to be the Fastest Locomotive in Canada. It Is to Haul the Canadian National's International Limited. Description on Next Page.

A Fine Specimen of Modern Power on the New York, New Haven & Hartford, Put Into Commission Last Year.

lieve, be at least 20 per cent more efficient than the locomotive of today."

Probably the most interesting feature of the day was that while each of the men who presented papers approached the subject in a different way it was apparent that their viewpoints all co-related. That the Locomotive of Tomorrow will in all probability be the locomotive of today modified one step at a time by further development and improvement. That it will be a superpower engine capable of developing a maximum of horsepower at sustained speed, and the real motive power problem is not for tomorrow but for today. How we can get rid of the obsolete and inefficient engines now running and take full advantage of the efficient and modern power now available so that the roads will be in a position to move forward with progress and changing conditions and take advantage of new developments as they occur without always being handicapped by having such a high per cent of their power as a loadstone to operating efficiency.

The regular program of the traveling engineers included the following committee reports and papers: Maintenance and Operation of Air Brakes and Rules Governing Train Handling Operation; Long Locomotive Runs; Frictionless Bearings; Piping of Locomotives and Fuel Conservation. The usual entertainment program and exhibition of appliances was carried out by the Railway Equipment Manufacturers Association of which C. M. Hoffman of the Dearborn Chemical Co. was president, L. B. Rhodes of the Vapor Car Heating Co., first vice president; Richard Welsh of the Nathan Manufacturing Co., second vice president, and Fred W. Venton of the Crane Co. secretary and treasurer.

Ralph Hammond of the New York, New Haven & Hartford R.R. served as president of the Traveling Engineers Association. At the closing session the following officers were elected for the ensuing year: R. A. Phair, Canadian National, president; H. B. Kelly, Pittsburgh & Lake Erie, first vice president; J. M. Nicholson, A. T. & S. F. Ry., second vice president; A. T. Pfeiffer, New York Central, third vice president; D. L. Forsythe, St. L.-S. F. Ry., fourth vice president; D. I. Bergin, Wabash Ry., fifth vice president; David Meadows, Michigan Central, treasurer, and W. O. Thompson, New York Central, secretary. J. C. Lewis of the Richmond, Fredericksburg & Potomac R.R. and D. J. Ayers of the Boston & Maine were elected to the executive committee.

The Long Train Contest

On page 15 of the August issue of *Transportation* was a brief item describing long freight trains run over the Erie and other railroads. It will be especially interesting now to reread the little story in view of what it stirred up.

The first reaction came from an official of the Pennsylvania Railroad who sent in a clipping from that road's newspaper dated Sept. 15, 1929. Here it is:

> On September 12, Middle division employes at Altoona made up a train of 150 cars of AG-12 freight, which is the Greenville classification, and moved it to Enola where it was relayed and dispatched unbroken to Morrisville, the train making the run of 257 miles in 18 hours and five minutes, including relay time in Enola Yard.

In the next mail came a letter from the New Haven System. Mr. Droege, vice president and general manager, says the report that the New Haven ran a train of 201 cars from Victoria, Va., to Roanoke "obviously is incorrect." It seems, upon mature deliberation, that Mr. Droege is right. He can have his way about it, especially as the New Haven has never invaded Virginia. The New Haven, Mr. Droege says, handled a train of 197 loads and four empties, a total of 201 cars and a caboose, 3,962 tons, with three electric locomotives, from New Haven to Harlem River, Nov. 15, 1914.

The latest contribution is from the Northern Pacific. The train wasn't so long but it had an interesting "consist." This was a 92-car stock train, from Montana for St. Paul, one of the longest trains of the kind handled in the Northwest. It carried 10,000 sheep and 1500 head of cattle.

Canada's Fastest Locomotive

The Hudson Type locomotive, No. 5700, designed by engineers of the Canadian National Railways, is to haul the world's fastest train, the "International Limited," Montreal to Chicago. To keep its schedule this locomotive frequently will have to travel 80 miles an hour, but this will not call for much effort as its driving wheels are 80 inches in diameter. The new Hudson is 92 feet, 5¾ inches long and weighs, engine and tender, more than 331 tons. The tender will carry 20 tons of coal and 14,000 imperial gallons of water. The boiler pressure is 275 pounds and the tractive power, without the booster, 43,300 pounds. With the booster another 10,000 pounds is added. Beauty in design is a feature of this locomotive. The sand dome has been eliminated, and practically all piping has been concealed, particularly that above the running board. The jacket is of polished steel and the rest of the locomotive and the tender are ducoed. The hand wheels are of stainless steel. This is the first of five such locomotives to be delivered to the Canadian National Railways before the end of October for use in the Montreal-Chicago service.

An Old Employe Retires

A locomotive engineer who has traveled more than 1,800,000 miles in an engine cab in 52 years and 4 months of continuous service, at the age of 70 on October 1 retired under pension on the Northern Pacific system. He is Fred Metcalf, who was the son of Charles Metcalf, pioneer railroad man who was a member of the crew which nearly 90 years ago took the first train into Chicago from the east over the old Michigan Southern & Northern Indiana Railway. The younger Metcalf and his father went to the Northern Pacific in 1878 when that pioneer railroad was building the first northern transcontinental line, the last link of which was completed in September, 1883. They fired locomotives when the old balloon stack wood burners were in use.

C. P. R. Enters the North

The Canadian Pacific Railway entered Prince Albert, Sask., thriving center of the new northland for the first time with the formal opening of the Lanigan-Humboldt-Prince Albert division by President E. W. Beatty. The ceremonies took place Sept. 30, marking a further step in the extension of C.P.R. service northward into the newer farming and mining fields of the north. The new line completes a direct C.P.R. connection between Regina, capital of Saskatchewan, and Prince Albert. Scores of new grain elevators have sprung up enroute, and thousands of acres of virgin farm land is being settled with the advent of the new line.

The Pennsylvania Railroad's new double-track bridge across the Allegheny river at Oil City, Pa., on the main line between Pittsburgh and Buffalo, will be completed and put in service in the near future, at a cost of over $1,500,000.

The Westinghouse Memorial Is Unveiled

Nearly 55,000 Employes of the Industries He Founded Contributed to the Notable Project

THE NATION'S leaders of industry, business, and scientific research paid homage to the late George Westinghouse, founder of the many Westinghouse industries, in the dedication of a memorial to the industrial leader in Schenley Park, Pittsburgh, Monday afternoon, October 6.

Assembled in a setting of unusual natural beauty, they observed the unveiling of the monument erected by the Westinghouse Memorial Association, composed of 54,251 members, mostly Westinghouse employes, who, with the assistance of appropriations made by the Westinghouse Electric & Manufacturing Company and the Westinghouse Air-brake Company, financed the undertaking.

The dedicatory ceremony, which began at 2 o'clock, was presided over by E. M. Herr, vice chairman of the board of directors of the Westinghouse Electric & Manufacturing Company. The program included addresses by A. L. Humphrey, president of the Westinghouse Air Brake Company, one of the leaders in the movement for providing the memorial; James Francis Burke, former congressman and now general counsel of the Republican National Committee, and Bishop Alexander Mann of the Pittsburgh Episcopal diocese.

Following these addresses, George Munro, representing the Westinghouse Veterans, presented the memorial, the unveiling followed, and Mayor Charles H. Kline made the speech of acceptance in behalf of the city of Pittsburgh. Music was contributed by the Westinghouse Employes' Band and the Westinghouse Employes' Chorus.

In the evening the guests attended a banquet at the William Penn Hotel where a program of music and speeches was presented. Dr. E. J. Van Etten delivered the invocation. After the dinner, the toastmaster, A. W. Robertson, chairman of the board of directors of the Westinghouse Electric & Manufacturing Company, was introduced by Mr. Humphrey. Congressman James M. Beck of Philadelphia, former solicitor general of the United States, and Lord Southborough, prominent industrialist of London, England, spoke, and the program concluded with an address, "George Westinghouse, An Appreciation," by John F. Miller, vice chairman of the board of directors of the Westinghouse Air-brake Company.

The Memorial in Schenley Park, Pittsburgh, Dedicated October 6, to Honor the Great Inventor, Soldier, Citizen and Benefactor, George Westinghouse.

George Munro spoke for the veteran employes of the Westinghouse industries. "The Scriptural assertion that a prophet is not without honor save in his own country and in his own house," said he, "is indicative of the fact that oftentimes men of outstanding fame abroad are slightly regarded at home.

"This was not so in the case of George Westinghouse. Those who knew him best loved him most. His inventive genius, his untiring labor and his commercial achievements made his name known and honored throughout the civi-

lized world. But here, in Pittsburgh, under the eye of thousands who found employment and opportunity in the industries he created, his oft-demonstrated belief that 'A man's a man for a' that;' his fairness, his consideration, his clean life and simple habits, made him beloved as well as honored and admired.

"For this reason, it is not surprising that when the Westinghouse Memorial Association was organized in January, 1927, the response to its invitation was prompt, hearty and almost unanimous on the part of those who, as employes of the Westinghouse interests at home and abroad, were entitled to membership.

"This memorial, which, in its beauty, its symbolism and its strength, typifies the character and achievements of George Westinghouse, is the unique gift of nearly 55,000 of his fellow-workers in shop and office.

"Mr. Mayor: In the name, and on behalf of this notable association, it is now my high privilege to present this memorial of George Westinghouse to the city of Pittsburgh, in the hope and belief that through the years to come it will be an inspiration to the youth, not only of the city he loved, but of the world for which he labored, and a constant reminder to young and old alike that the truly good are never forgotten."

In an address made notable by a perfection of oratory not often heard in these hurried days, James Francis Burke, former congressman and now general counsel to the Republican National Committee, said George Westinghouse was one of the dynamic forces of his day.

"He generated courage among his contemporaries and left to those who succeeded him an example worthy of emulation," said Mr. Burke.

"If no other tribute were paid him today than that conveyed by the presence of this distinguished gathering of leaders in almost every branch of science and industry from many sections of the world, this event would in itself bear eloquent tribute to the esteem in which mankind holds his memory.

"It was he who first made safety the handmaiden of speed. It was he who was a leader in multiplying the world's motive power on land and sea. It was he who brightened the pathway and lightened the burden of God's children as they toiled and traveled on their never ending journey down the ages.

"As the radio carries my tribute on invisible wings to unseen millions at this hour, it would seem that the benedictions of the countless thousands to whom his inventions and industrial institutions have given employment, must likewise reach the ear of his own immortal spirit, which will forever linger like a magic inspiration over the valley which he dotted with his works and dedicated to the service of the world.

"As long as a wheel turns or a light burns, or men's footsteps respond to the march of industry in the Turtle Creek valley, the name of George Westinghouse will echo and re-echo in the ears and shine before the eyes of coming generations."

The Westinghouse memorial was made possible largely through contributions from the thousands of workers in the industrial army which has loyally carried on the Westinghouse tradition in the United States, Canada, Europe and Japan. Daniel Chester French, foremost among modern sculptors, contributed the best of skill and genius to produce the figure of American Youth and the main panel. These are hailed as, possibly, the greatest works in the master's brilliant list. Henry W. Hornbostel, designer of the Harding Memorial, the Hellgate Bridge, and sundry notable public buildings, designed the beautiful setting of the memorial. Paul Fjelde, a rising young Italian sculptor, has gained considerable fame for producing powerful, striking bronze records of Westinghouse's six greatest mechanical achievements.

Usually, the principal feature of monuments of this kind is the man himself, but it was thought that, in the case of George Westinghouse even his magnificent figure would be inadequate to express his accomplishments; so, although he is shown in a large medallion, leaning over his drawing board, greater emphasis is laid upon those who worked with him, the things of steel and power he brought into being, and, more especially, an American youth, who gazes upon him with eager, yet reverent, interest. This American youth modeled by Daniel French is of heroic size, and is done in gold-leafed bronze to correspond with the rest of the memorial. When first seen, he stands with his back to the spectator, but, owing to the direction taken by the paths leading to the memorial, he is actually approached from the side, and his pose was studied primarily with this in mind. He is a handsome, serious lad, with slender proportions that are distinctly American. He carries his school books in one hand, and in the other his cap, removed in reverence, and crumpled in his fingers. He may well become the recognized type of the race.

A veteran mechanic who had worked with Mr. Westinghouse when he conceived many of his inventions, and a Westinghouse Airbrake Company engineer were chosen as models to typify American workmen and engineers in deathless bronze.

The model of the American youth was a much more difficult task. More than a year of constant work was spent in producing the figure. Mr. French was most exacting in transmitting his conception of a real Yankee boy into a statue. He tried several types but changed them. Finally, he produced the desired effect. The American youth is a robust, wholesome-looking young man, and rather handsome. He looks very much like Colonel Lindbergh, in his teens, though Mr. French said he had no specific person in mind when he conceived the figure other than that of a real, healthy young American. He is garbed in a rough sweater, knickers, golf stockings and brogans. Critics are unanimous in proclaiming it the only successful and popular interpretation of American Youth. And Mr. French himself has come to like the young man so much he admits that, in his opinion, it is the finest work of his career.

The names of the nearly 55,000 employes of the industries founded by George Westinghouse who contributed to the erection of this memorial, have been enscribed upon a document placed in a hermetically sealed compartment at the back of the monument. Among other relics placed there is a motion picture film of the dedication ceremonies which, perhaps, will be viewed again hundreds of years from now. Special attention was given to the landscaping of the surroundings of the memorial, as its setting was considered as important as any other detail. The building of the paths, the profuse planting of rhododendrons and countless other shrubs, the removal of trees that marred the general effect, and the careful preservation of those that added to it, the placing of Norwegian granite benches, the creation of the pond formed by the stream that trickles out from under the memorial itself, all of these help to bring about a complete artistic ensemble.

The monument stands upon a base of Norwegian granite, the most beautiful of building materials—a jet black stone with embedded crystals of felspar which gleam blue where the light strikes them. Its principal component consists of a large central panel flanked by two semicircular

wings, all of which are made of gold-leafed bronze with Norwegian granite insets.

The central panel carries the medallion of George Westinghouse supported on an open-work background of oak tree foliage, and on either side are two figures, one a skilled mechanic and the other an engineer with his slide rule. Both the portrait and the figures are modeled in full relief. Below the medallion is the following inscription:

GEORGE WESTINGHOUSE
Union Soldier
Citizen of Pittsburgh
Founder of the Westinghouse
Industries
Benefactor of Humanity
Through His Labors
and Inventions
1846-1914
Erected by
WESTINGHOUSE MEMORIAL
ASSOCIATION
of 54,251 Members
Who Served With Him in the
Army of Industry

"A very unique sculptural effect, one which has never been tried before and which taxed the ability of the sculptor," said Mr. Hornbostel, "is that the rear of this panel shows the backs of the two figures as well as the conventional design of the oak tree. In other words, the panel is worked in full relief on both sides. This was done to avoid constructing 'just a front', and to make the rear view, which is seen as one follows a path leading down the valley, as interesting as the front."

At the bottom of the central panel is a memorial of the most important period of Mr. Westinghouse's career—a representation of the first train to be equipped with the Westinghouse airbrake. Each of the flanking wings is divided into three panels, and on each panel is depicted in low relief one of Mr. Westinghouse's achievements. These include the illumination of the Chicago World's Fair of 1893 by the alternating-current system developed by Mr. Westinghouse; the hydro-electric plant at Nigara Falls with the 5000-horsepower alternating-current electric generators which were supplied by Mr. Westinghouse and were at that time the largest in the world; the steam turbine, introduced into America by Mr. Westinghouse and now used universally for electric generation by steam power; alternating-current railroad electrification, which Mr. Westinghouse advocated and made practicable; and the airbrake, the most famous of all Westinghouse inventions; and railroad switching and signaling systems, another of the inventor's important contributions to the railroad industry.

The Long-Familiar Picture of George Westinghouse at His Desk, Similar to that on the Memorial Showing the Inventor at His Drawing Board.

These panels were executed by Paul Fjelde, and presented a most difficult artistic program, as the subjects are all mechanical. Mr. Fjelde solved this problem, however, by a skillful handling of the most prominent lines in each of his subjects. His trains rush forward, his searchlights quiver, the waters pour over the cliffs at Niagara.

The central panel and its supporting wings would in themselves form a beautiful and interesting monument, but the creative genius of the artist has added another detail which transforms the whole work from a dead, into a living, record—the figure of the American Youth. Standing well back from the panels and facing it, in a natural position and attitude, he represents this generation inspired by the accomplishments of the master.

Beware of Shylocks

The supreme court of Kansas has held that the exaction of usury for small sums of money lent to wage earners, the collection of which is effected by garnishment proceedings and threats of such proceedings which cause the borrowers to be discharged by their employers, and which systematically set at naught the statutes enacted to prohibit usury and protect wage-earners from ill-founded garnishments, may reach an extent and gravity which justifies the institution of injunctive proceedings by the state itself to suppress it.

The petitions filed by the attorney general on behalf of the state for injunctive relief to suppress the systematic exaction of usury were held to state good causes of action against the two defendants against whom suits were brought.

Precedents for the particular form of redress sought by the plaintiff are said in the opinion to be rare, but the New Jersey court of errors and appeals is said to have gone farther than the relief asked in the present action. Though usury is not one of the specific offenses enumerated in the crimes act, the legislature, the opinion points out, has denounced as unlawful the exaction of usurious interest. Interest was charged in some cases ranging from 240 to 520 per cent a year.

"Leadership cannot carry progress far ahead of the average of the mass of individual units."—*Herbert Hoover.*

About Locomotives of Tomorrow

SEVERAL letters with respect to the current discussion of Locomotives of Tomorrow came too late for the September issue of *Transportation*. They are just as interesting now, coming as they do, from men of much experience. The first is from Elliott E. Nash, chief operating officer of the Minneapolis & St. Louis Railroad. Mr. Nash says:

Frankly, we do not know what to expect. There are many possibilities. With all the active minds that are engaged upon this important subject, it is certainly hazardous to voice a decided opinion, but one person's prophecy is as good as another's.

It does seem that we have about reached the limit in the matter of still larger engines. It is not likely that we have reached the limit of the demand for greater hauling capacity and faster time. Greater hauling capacity and faster time can be brought about by the elimination of grades, curves, grade crossings, and the use of multiple tracks, all of which means a huge expense. It is hardly conceivable that there are in the near future, any possibilities of a change in the gauge of railway track.

In view of the performance of the electric locomotive, it is our thought that this type of power would seem best to meet the needs of the immediate future. The distribution of weight, the flexibility as to operation, and multiple units from a single control, would seem to make this type of power very desirable, both for main line and branch service. Some of the stronger railroads are already enjoying such installations, but the cost thereof is prohibitive for a greater portion of the railroads.

The rapid improvement of the Diesel, oil, and gas-electric locomotives would seem to indicate that this type affords many railroads an opportunity to bring about further improvement in operation. The use of oil or gas by some railroads is not feasible, and especially for those roads farther away from the oil fields. It would seem possible, that our designers might, in the near future, adopt steam for the generation of electricity in lieu of oil or gas. The use of pulverized coal burned in suspension, with purified water seems to us to have possibilities. Reduced to the fewest words, it is our dream that the locomotive of tomorrow will be along the general design of the electric locomotive, the power to be furnished either via trolley, Diesel, oil, gas, or steam power, or compressed air, via oil, gas or steam; that possibly three types as to weight will be sufficient for one railroad, that is light, medium and heavy units; that additional units may be added to meet the requirements of each individual train, and that branch lines will be served by one or more units, the particular type adapted to its weight carrying capacity.

In connection with this subject, we have also in mind, which we believe goes along with it, "Tomorrow's freight car." It is our thought that in view of the demand for faster service, our freight equipment should be brought up to a higher standard; that is, all-steel with passenger trucks, roller bearings, high speed brakes, etc. Many passenger trains are now being operated that could just as well as not handle a few more tons of high class freight if suitable equipment were available. It is believed that by gradual replacement of the present day equipment, great economies might be effected by the use of equipment that can be safely hauled in passenger trains at high speed, and that this program carried out would eventually bring about a material reduction in the number of units necessary to care for the business of the country, by reason of faster movement.

O. S. Jackson, general superintendent of motive power for the Union Pacific System, Omaha, says:

It is our opinion that the limit of physical size and weight of locomotives has practically been reached. Also the limit of driving axle load has been reached, and in many cases exceeded, as is evidenced by the alarming increase in the number of rail fissures on such roads as have increased their axle load to much above 60,000 lbs. per pair. A recent investigation in our engineering department disclosed that as driving axle loads increased above 60,000 lbs., the number of rail fissures developed in a geometric ratio.

The tendency during the last few years has been toward refinement of design and the application of power increasing devices, rather than increasing weight or size. This tendency will undoubtedly continue, so that the locomotive of the future will produce more horsepower at higher speeds and with less fuel per horsepower hour. This cannot be accomplished, however, without an increase in the unit cost to cover such features as improved superheaters, nickel steel boiler shells for higher pressure, boosters, etc.

The tendency has been toward higher boiler capacity, which produces a flatter tractive power curve. It is now possible to produce a 4-6-4 type locomotive, which compared with a Pacific type engine built 18 or 20 years ago, producing 65 per cent more tractive power at 70 miles per hour, although the starting tractive effort is only 7 per cent greater. It is logical that such an engine requires a booster to help it up to the speed at which this increased horsepower becomes available.

There is a growing tendency to retire obsolete power and replace it with larger and more economic units, having higher earning capacity in ton miles per hour with reduced fuel consumption. There will always be a continuation of the program of retiring main line equipment to branch line service, including converting Consolidation and Mikado type locomotives into switching locomotives.

The future of the electric locomotive depends upon local operating conditions and is and will remain to be largely a function of traffic density. Mistakes have been made in electrifying lines in sparsely settled districts, which has furnished valuable object lessons to all concerned.

The oil-electric locomotive is not developing so rapidly as its most enthusiastic advocates seem to believe. The intrinsic operating economy of the oil-electric locomotive is granted, but the mechanical problem of transmitting the power of the Diesel engine to the wheels has not been satisfactorily solved to date. The Diesel engine, however, we believe has remarkable future possibilities. The perfection of the oil-electric locomotive with Diesel power perhaps remains for the next generation to solve.

This letter comes from L. W. Baldwin, president of the Missouri Pacific Railway:

It is my opinion that the steam locomotive will continue to handle the major portion of the traffic for a good many years. Further improvements in design from time to time will lead to more efficient and economical operation of this type of locomotive, as compared generally with other types of locomotives.

It is very likely that there will be a larger percentage of electric locomotives in use as soon as traffic is heavy enough to warrant the investment. This also applies to the Diesel-electric locomotive, which under certain peculiar operating conditions has already proved itself economical.

General Foremen Convene

The International Railway General Foremen's Assn. held its 25th yearly meeting, Sept. 16-19, at the Hotel Sherman, Chicago. Forty-nine supply companies had exhibits arranged under the auspices of the Association of Railway Supply Men. This association elected officers for the fiscal years 1930-1931 as follows: President, J. W. Fogg, MacLean-Fogg Lock Nut Company, Chicago; secretary-treasurer, J. F. Gettrust, Ashton Valve Company, Chicago; executive committee members: Chairman, E. H. Weaver, Westinghouse Air Brake Company, Chicago; Fred Ehredt, (one year) Nathan Manufacturing Company, Chicago; R. Q. Milnes, two years) Dearborn Chemical Company, Chicago; P. J. Conrath, (three years) National Tube Company, Chicago; J. F. Raps, (three years) Okadee Company, Chicago.

The general foremen elected these officers: President, A. H. Keys, general car foreman, Baltimore & Ohio, Pittsburgh; first vice president, A. T Streeper, general foreman, Nickel Plate, Conneaut, Ohio; second vice president, W. J. McClosky, general car foreman, Illinois Central, Centralia, Ill.; third vice president, C. M. Hillman, shop superintendent, Minneapolis & St. Louis, Marshalltown, Iowa; fourth vice president, Martin A. R. Slack, general foreman, New York, New Haven & Hartford, New York; secretary-treasurer, William Hall, Winona, Minn.

The forces of nature discriminate for no man.—*Herbert Hoover.*

The Masters Who Care for the Railway Tracks

Old Time Section Gang Still Favored

By J. W. Riley

The Irish Were Predominant in the Section Gangs of Long Ago. The Men Here Were on the Baltimore & Ohio in 1852. Reproduced From the Painting for that Road by H. D. Stitt.

THE AVERAGE traveler on a railroad, enjoying the comforts and conveniences of modern transportation, gives credit, if he thinks of the matter at all, to the persons and things he can see. Section gangs, work trains, maintenance of way, are beyond him, just as the science and skilled labor which produce the traveler's balanced meal in the diner are out of his ken. As he knows nothing about such things, and doesn't know that the first and one of the most important jobs on a railroad is the section foreman's, this traveler doesn't worry.

This is just as the management wishes it to be, a good roadbed well maintained, trains that ride smoothly, carrying unworried passengers. And, when all is said and done, this is why the meetings and deliberations of the Roadmasters' and Maintenance of Way Association are so important. Listening to the members' papers and discussions in the yearly gatherings, one is impressed always with the serious duties to be performed, and the exceedingly intelligent way in which the association and its officers attend to them.

When the roadmasters met, last month, at the Hotel Stevens in Chicago, a visitor wondered over the highly educational value of the subjects handled, and especially about what a fine thing it would be for improved public relations if some determined effort were made to attract public attention to these matters, and to the instructive influence of the exhibits arranged by the Track Supply Association. No traveler, no business man, could fail to be impressed favorably by the care and thought directed to making journeys pleasant and safe, to the constantly improving service made possible for shippers through the skillful work of track men.

These men have problems to consider, and if possible, to solve, in the interest of better railroading. Throughout the years, between their meetings, committees labor in studying one or a dozen factors of the work they and the members have to do; and the results are announced in reports read in the two or three-day sessions. This year's outstanding subjects had to do with matters of organization, the equation of track mileage as a basis for the distribution of forces; ways in which to get the highest return with labor-saving equipment, and the dividing of work between section and extra gangs. New forms of organization developed on the Chicago, Milwaukee, St. Paul & Pacific were described, and the committee's attitude set forth. In the main, while interest in new methods were considered thoughtfully, continued reliance on the old time section gang as the trustworthy basis for maintenance of way was quite apparent.

A committee reporting on the use of motor trucks in track work provided important information indicating possible economies through using such highway vehicles in distributing materials, as against the costly work trains which, so far as the dispatcher is concerned, usually are just where they ought not to be on the main line when passenger trains or fast freights are due. Another instructive report had to do with track drainage.

In addition to the reports several papers were presented. Among these were: European Track Construction and Maintenance, by J. V. Neubert,

chief engineer, maintenance of way, New York Central; Looking Ahead in Maintenance of Way, by Lem Adams, general supervisor of maintenance of way for the Union Pacific at Omaha; Method and Organization for Laying Rail on the Pennsylvania Railroad, by R. W. E. Bowler, division engineer, Pennsylvania, Pittsburgh; Safety in Maintenance, by J. E. Long, superintendent of safety, Delaware & Hudson Co., Albany; Track Maintenance as Affected by Signal Operation, by R. A. Sheets, assistant signal engineer, Chicago & North Western.

Some idea of the demands of modern transportation, confronted everywhere by the railroads, is to be gained in quotations from the interesting address of L. C. Fritch, vice president in charge of operation for the Rock Island Lines, in the opening session of the convention, Tuesday morning, September 16. Expressing intelligently the real significance of the association's work in relation to the public, Mr. Fritch said he believed it unfortunate that the railways do not avail themselves more fully of the excellent work done.

"After expending great efforts to establish standard practices and methods," said Mr. Fritch, "they could be used more generally than they are with great benefits to the railways.

"With the speeds required on modern railways, and we are in a speed age, it requires the very best to meet the demands of the times. With airplanes making 150 m.p.h., railway speeds of 60 to 70 m.p.h. are slow in comparison. Who knows but that the future will find the railways equipped with heavy roadbeds, larger and heavier ties, rails of 150 lb. or more per yd. and locomotives propelled by electricity, making speeds of 100 to 125 m.p.h.? Such things are not impossible, and may be required to meet the ever-increasing demands of a fierce and increasing competition.

"America was built up by the railways, and owes its progress and success more to railway transportation than any other single factor. We, who have had a part in it and have in a way helped to bring it up to its present high standard, feel a pride in it, and we should strongly resent any influence that tends to tear it down or cause it to deteriorate or go backward.

"Many able railway men think that the railways have passed the peak in their operation and owing to the various social, economic and political forces at work, will go backward in the future, unless a determined effort is made to combat honorably the influences that are at work depriving them of their well-earned birthright. The railroad business today is being conducted upon the highest plane of any industry in this country. I say highest advisedly. It has nothing to hide in the manner in which the business is conducted. Railway men are among the best and most respected citizens of our land. Certainly they are entitled to at least a square deal.

"I am a believer in preparedness. I feel that the railroads are threatened with a real menace, which will deprive them of something they have earned through long years of work, the expenditure of vast sums of money and the employing of millions of men, and that they should prepare to meet this situation in a determined, honorable manner to preserve *our* industry. That the American public is not familiar with all the facts that menace the railways is apparent, and I think it is your duty and that of every railway employe to inform it as rapidly as we can.

"I shall cite one instance: The thousands of trucks that are taking away an ever-increasing part of short haul freight from the railways are hauling the goods that you and I buy of the merchant with railroad money. Why should we not say to the merchant with whom we trade: We get our money from the railroad and in all fairness we should not buy your goods if you haul it in by trucks, because by so doing, we are destroying our own industry. If this were generally done, thousands of 'fly-by-night' trucks would go out of business.

"One of the great menaces to the railroads is the development of waterways. Anyone familiar with this subject, or who will take the time to investigate it, will find that there are numerous examples in the country today of money expended for waterways that have been uneconomical and will continue to be so. The railroads have the right to protect themselves against the menace of this encroachment upon their legitimate traffic. If every waterway project were analyzed, very little, if any, money would be expended on such a wasteful enterprise.

"These forms of competition are most unfair and in the end the American people will not stand for them. It is your duty as railway employes to protect the interest which gives you your living; counsel with the public and tell the true story with respect to the influences which threaten the railroads, and in which the public is just as much interested as you are. I am satisfied that if the American public learns the true story, and knows of the attacks which are being made upon the railroads, the sentiment will be in favor of the railroads."

Officers elected for the new year are: President, Elmer T. Howson, western editor of the Railway Age, advanced from vice presidency; first vice president, C. W. Baldridge, assistant engineer, Santa Fe Railway, Chicago; second vice president, J. J. Desmond, division engineer, Illinois Central, Chicago; secretary, T. F. Donahoe, general supervisor, Baltimore & Ohio; treasurer, James Sweeney, Chicago & Eastern Illinois. Mr. Donahoe and Mr. Sweeney were re-elections. Chicago was chosen for next year's convention.

The association's receipts during the year were $715 more than disbursements so that the treasury now has assets of $5,904. The membership is now 943 compared with 866 last year.

Attendance this year numbered more than 250 members, but to this were added visitors from other railroad organizations in session in the city or about to hold conventions. Twice this number attended the yearly banquet at which S. H. Cady, general solicitor for the Chicago & North Western Ry., was the principal speaker. Mr. Cady gave his attention to a review of the railway transportation situation with particular reference to competition from highway automotive vehicles, and inland waterways promoted by the federal government.

Sixty-eight manufacturers of materials and devices used in track work had exhibits at the Stevens during the meeting, under the auspices of the Track Supply Association. In electing new officers for the year this association adhered to the usual custom of promoting the faithful. Vice President D. J. Higgins of Chicago accordingly became president. Mr. Higgins is with the American Valve & Meter Co. G. T. Willard, Railroad Supply Co., Chicago, was elected vice president, and L. C. Ryan, Oxweld Railroad Service Co., Chicago, was re-elected secretary-treasurer.

"The goal of every man is to make money faster than his family can spend it—there are no idle rich today, so many are chasing them to get their worldly goods."—*Lord Dewar.*

The sum of wisdom is that the time is never wasted that is devoted to work.—*Emerson.*

It is impossible for any man not to have some enemies.—*Chesterfield.*

Modern Repair Shops for the C. & O.

Huntington, Ind., and Russell, Ky., Equipped for Speed and Efficiency

By Charles Dillon

THE NEW locomotive repair shops at Huntington, W. Va., designed for a capacity of 50 Class 1, 2 and 3 repairs a month, were completed in the early part of 1930. The old smith shop was retained; the longitudinal Mallet shop with machinery bay constructed in 1919, which was a modern structure built for future extensions, was converted into a stripping and finishing bay and a rod and valve motion bay for the new shops. A part of the boiler shop was built as first unit of the new shops in 1926. The old transverse erecting shop and machine shops were entirely dismantled. Although the new shops were built over and around the old shops, which necessitated the dismantling of the old buildings by steps, relocating the existing machinery used and installing new machinery, the shop operation was not seriously affected. The Huntington shops were built by the United Engineers & Constructors Inc., New York, from plans by the chief engineer of the Chesapeake & Ohio.

With the exception of the smith shop, these shops are all under one roof with no walls between the various repair bays. The building is of modern fireproof concrete, brick and steel. Practically all the floors are of wood blocks set on concrete. The building is well ventilated by motor-operated sash and roof ventilators, and a maximum amount of diffused daylight is provided. All departments are illuminated at night by a system of direct incandescent lighting. The shops are heated by floor and wall type unit heaters with steam from the power plant as weather conditions require. All lockers are of steel, and modern toilet facilities are provided. Sanitary drinking water fountains are provided throughout the shops, practically all of which are cooled by electric refrigeration. There is a manufacturing tool room in this building, equipped with modern machinery and heat-treating facilities for making special tools. Standard tools are purchased. There is also a modern chemical and physical laboratory for analyzing and testing materials.

In the new shops, 202 new motor driven machines were installed; 104 motor driven machines from the old shops were relocated; 28 belt-driven machines from the old shops were motorized and relocated and 2 belt-driven machines from the old shops were relocated. With the exception of these two all of the machines have individual motor drive.

The boiler shop machinery bay is approximately 50 ft. by 539 ft. and is served by the following overhead traveling cranes and jib cranes with electric hoists:

Two 15-ton electric overhead traveling cranes
Ten 5-ton column jib cranes with 5-ton electric hoists
Nine 2-ton column jib cranes with 2-ton electric hoists.

Cabs and ash pans are repaired in the north end of this bay, and the remaining space is used for boiler shop machinery, laying-out work, etc. The boiler and tender repair bay is approximately 90 ft. by 539 ft. and is served by the following overhead traveling cranes and jib cranes with electric hoists:

One 50-ton electric overhead traveling crane

General View of Huntington Shops Looking North With Storehouse and Material Handling Crane in the Foreground

Machine Bay in Boiler Shop Looking South Showing Office and Tool Room.

One 15-ton electric overhead traveling crane
Six 5-ton column jib cranes with 5-ton electric hoists
19 2-ton column jib cranes with 2-ton electric hoists.

Tenders are repaired in the north end of this bay and boilers are repaired in the south end.

The wheel bay is approximately 80 ft. by 619 ft. and is served by the following overhead traveling cranes and jib cranes with electric hoists.

Two 15-ton electric overhead traveling cranes
Two hand operated traveling cranes with 1-ton electric hoists, operating on sub-runways over driving box fitting track.
One hand operated traveling crane with 1-ton electric hoist, operating on sub-runways over axle lathes.
One 1½-ton self-supporting jib crane with 1-ton electric hoist.
13 2-ton column jib cranes with 1-ton and 2-ton electric hoist.

The following machinery and work groups are situated in this bay: Lye vats, wheel storage tracks and facilities for heating and changing tires; axle crank pin and wheel work; driving box and cellar work; steam and exhaust pipes, superheaters and units and feed water heaters.

The erecting bay is approximately 95 ft. by 608 ft. and is served by one 250-ton electric overhead traveling crane at high elevation for handling locomotives and boilers, and 3 15-ton electric overhead traveling cranes at lower elevation. There are 25 transverse pits in this bay, three of which extend through the stripping and finishing bay. One of these tracks is used for unwheeling engines, and two are used for wheeling. These three tracks extend across the wheel bay, and two of them across the boiler shop. There are also two other tracks from the erecting bay extending across the boiler shop.

The heavy machinery bay is approximately 80 ft. by 484 ft. and is served by 2 15-ton electric overhead traveling cranes and 14 2-ton column jib cranes with 1-ton and 2-ton electric hoists, also an electric winch for pulling engines from the stripping track. In this bay are:

Engine and trailer trucks, boosters and stokers.
Miscellaneous work.
Bolts and pins.
Frames, pilot beams, deck and draw castings.
Cylinders and heads, steam chests and valves.
Shoes and wedges.
Pistons and rods, crossheads and guides.
Portion of machine tool repair work.

The light machinery bay (first floor) is approximately 60 ft. by 443 ft. and is served by one 2-ton 23-ft. span hand power traveling crane with 2-ton electric hoist over spring and brake rigging group and one 2-ton column jib crane with 1-ton electric hoist in physical laboratory. The following machinery and work groups are situated in this bay:

Portion of rod shop machinery.
Distribution tool room.
Spring and brake rigging.
Blueprint room and sub-store room.
Throttles and reverse levers, cylinder cock rigging, drifting, intercepting and by-pass valves.
Electric shop.
Physical test laboratory.
Portion of machine tool repair work.

The light machinery bay (second floor) is approximately 60 ft. by 484 ft. and is served by 3 1-ton 24-ft. span hand-operated traveling cranes with 1-ton electric hoists and two electric material elevators. The following machinery and work groups are situated in this bay:

Heat treating room.
Manufacturing tool room.
Turret lathe work.
Chemical test laboratory.

The main and side rod and valve motion bay is approximately 43 ft. by 278 ft. and is served by one 10-ton electric overhead traveling crane and one 2-ton column jib crane with 1-ton electric hoist. The following machinery and work groups are located in this bay:

Main and side rods.
Valve motion and reverse gears.

The stripping and finishing bay is approximately 69 ft. by 358 ft. and is served by 2 15-ton electric overhead traveling cranes and a portable electric spotter for valve setting. This bay has three tracks leading into the north end of the erecting bay. The center track is used for stripping and the other two tracks are used for finishing locomotives.

The pipe and tin shop bay (first floor) is approximately 53 ft. by 358 ft. and is served by 4 2-ton

Progressive Bay Locomotive Shop Looking East Showing Two Outbound Tracks and Inbound Track in Center Where Stripping and Finishing Operations are Performed.

column jib cranes with 1-ton or 2-ton electric hoists. The following machinery and work groups are situated in this bay:

Air and boiler feed pumps and pneumatic appliances.
Pipe fitters.
Jacket work.
Pipe work.

The pipe and tin shop bay (second floor) is approximately 53 ft. by 358 ft. and is served by a monorail, with 1-ton electric hoist, extending out of west end of bay, and two electric material elevators. The following machinery and work groups are situated in this bay:

Air brake and boiler mountings.
Brass work.
Tin work.

Toilet rooms are on the mezzanine floor of this bay, and offices and toilet rooms on the mezzanine floor of the light machinery bay. The sand-blast house, east of the transfer table on the east side of the boiler and tender repair shop, is approximately 32 ft. by 100 ft. with a sanding track the length of the building for sand-blasting tenders, cabs and other parts, also for scaling boilers. Granulated steel is used instead of sand. This building is constructed of concrete and steel with corrugated protected metal siding and roof.

The outside material handling runway along the west side of the light machinery bay with one 10-ton electric overhead traveling crane, which was a part of the old shops, was retained and an additional material handling bay was provided between the south end of the shops and the store house with one 15-ton 80 ft. span electric overhead traveling crane.

Locomotives are inspected 90 days before they are due for shopping in order to determine the major items of material needed. The tenders are cut loose at the coal elevator west of the west end of the stripping and finishing bay, where the remaining coal is removed. The tenders are handled by a small electric storage battery locomotive on a track north of the pipe and tin shop bay to the transfer table east of the boiler and tank shop, where they enter. The locomotives enter the west end of the stripping and finishing bay on the center track where they are stripped in progressive positions. The removed piping is stored on outside racks and the other parts, after being cleaned, go to their respective departments. The locomotives are then pulled into the erecting bay where they are unwheeled. The wheels, boxes, trucks, etc., pass through the cleaning vat at this end of the wheel bay, and the brake and spring rigging is cleaned by passing through an annealing furnace.

Erecting Bay Locomotive Shop Looking South With Heavy Machine Bay on Right, Wheel and Driving Box Bay on Left.

The locomotives are handled by crane to vacant pits in the erecting shop. When it is necessary to remove the boiler this is done in the boiler shop or the boiler can be taken to the shop on special trucks. Such boilers are handled over the tender transfer table to the sand-blasting plant for scaling. Locomotives are wheeled on the two wheeling tracks in the erecting shop and then pass to the stripping and finishing bay where they are completed progressively. The tenders are sand-blasted before painting, and, when completed, they are handled back to coal elevator west of the stripping and finishing bay where sufficient coal is put on for firing boiler. The tenders are then coupled to the completed engines on the finishing tracks, where they are fired up. A motor driven exhaust fan with hood and stack is provided on each finishing track. The completed locomotives leave the stripping and finishing bay under steam.

A scheduling and routing system is in effect which sets the time for completing the different classes of repairs for the various type of engines, also the time of delivery of the major parts to be repaired to the various departments and the time for completion. This schedule also sets the time for completing various steps of stripping and erecting, and a daily check is made of the progress. When each department is on schedule, there is little confusion or waiting.

Orders for material, and for the movement of parts undergoing repairs are placed in station boxes at various points in the shops. Material not handled by overhead cranes in the shops is handled to the designated point, by the supply depart-

View of Turret Lathe Group Looking North Second Floor Over Light Machine Bay.

Non-Progressive Bay Russell Freight Car Shop Looking East.

ment, with electric trucks and electric and gasoline tractors with trailers. The movement of all material and parts undergoing repairs from one location to another, except when handled by overhead cranes, is handled in a similar manner by the supply department. The shops are cleaned by the mechanical department on the second shift and the scrap, sweepings, etc., from the shops are removed by the supply department.

The Russell shops are 3½ miles west of the Kentucky town of that name on the main line of the C. & O. They were designed for a daily capacity of 40 heavy repair steel cars; at present some wood box cars are being repaired. All the buildings are modern, fireproof, concrete, brick and steel. The roof and siding of the rivet burning shop and a portion of the erecting shop siding is of protected corrugated metal. The sash and roof ventilators are motor-operated and the buildings were designed to provide a maximum amount of diffused daylight. A system of direct incandescent lighting is provided in all buildings with vapor proof fixtures and switches in the paint shop. The yard is illuminated by tower flood lights. All lockers are of steel; there are modern toilet facilities, and the sanitary drinking fountains provide water cooled by electric refrigeration. Shop buildings are heated by floor and wall type unit heaters with steam from power plant.

The rivet burning shop, 83 by 702 ft., has two rivet-burning tracks, each with working space for 17 50-ton cars, and a center track for loading scrap and serviceable material. This shop is served by one 5-ton electric overhead traveling crane with magnet. The storage yard for bad order cars is south of this building. The storage yard for cars out of the rivet burning shop is at the west end of, and between, this shop and the erecting shop. On the east side of this storage yard is a 40 by 111 ft. power plant containing two 381 h.p. stoker-fed water tube boilers for heating purposes with feed water pumps and equipment for utilizing the exhaust from the boiler blower fans and other auxiliaries, also for supplying the boilers with warm water from the air compressors and condensate from the shop unit heating system. Two motor driven 2874 cu. ft. air compressors supply compressed air for the shops. The power plant is equipped with coal elevating and ash handling machinery.

The wheel shop is 50 by 114 ft., equipped with modern motor driven machinery for turning axles, boring and mounting wheels, turning steel wheels, truing journals of mounted wheels, and grinding tools. The storage tracks for mounted wheels is between the wheel shop and the east end of the erecting shop. This erecting shop has two car repair bays 80 by 750 ft. each, a truck repair bay 80 by 100 ft., and a smith bay 80 by 175 ft.

Each of the two repair tracks in the south or progressive car repair bay has working space for 21 50-ton cars; the center track is kept open for handling material. This bay is served by two 15-ton electric overhead traveling cranes, and the west end of each repair track is equipped with 12 2½-ton floor-operated electric traveling cranes operating on sub-

Panorama of Russell Car Shops With Rivet Burning Shop in Right Foreground Where Cars are Cut Down and Started Through Shop for Progressive Operations.

runways. Each of the two repair tracks in the north or miscellaneous car repair bay has working space for 17 50-ton cars. The center track is used for trucking and untrucking cars and repairing and storing trucks. This bay is served by two 15-ton electric overhead traveling cranes. Three 5-ton floor-operated electric overhead cranes are now being installed on a sub-runway over the central raised portion of the truck repair track.

The truck repair bay has four repair tracks the full length of the bay. These have pits and depressed floor. This bay is served by one 15-ton electric overhead traveling crane and by four 5-ton floor operated electric overhead traveling cranes on sub-runways over the repair tracks.

The smith bay has modern equipment for drilling, reaming, riveting and straightening material. Practically all of the sheet material is purchased fabricated, and most of the forgings are purchased or supplied from Huntington shops. This bay is served by one 15-ton electric overhead traveling crane, two 5-ton monorail electric hoists serving gap riveters, and two 2-ton self-supporting jib cranes with electric hoists. In addition to the outside material storage bay between the smith and truck shops, which is served by the two overhead cranes in these shops, one 15-ton 80 ft. span electric overhead traveling crane operates over outside material platforms between the erecting shop and the store house, the full length of erecting shop. There is also a crane runway at higher elevation with one 15-ton 80 ft. span electric overhead traveling crane at the west end of the erecting shop.

The store house, 62 ft. by 102 ft. with offices on second floor, is south of the east and west outside material bays. The storage yard for cars out of the erecting shop is west of the erecting shop and north of the paint shop. A temporary device is being used on this yard for sand-blasting some of the cars. A modern sand-blasting plant using granulated steel instead of sand, also sheds for applying priming coat are now being installed in this yard.

The paint shop equipped for spraying cars is west of the erecting shop. This building is 90 ft. by 678 ft. with five tracks, each having working space for 14 50-ton cars. The floor is lower than the base of the track rails to provide room for pipe and air brake work and underneath-painting. A pipe and air brake shop 25 ft. by 78 ft., and a paint mixing and stencil room, 40 ft. by 60 ft. adjoin the paint shop on the south.

View of Material Handling Crane and Runway and Material Storage Looking West Between Car Repair Shop on Right and Storehouse on Left.

In planning the shops and yard layout, ample provision was made for car and material storage with the view of reducing the handling to a minimum.

View of Progressive Bay Russell Freight Car Shop Showing Two and One-Half Ton Capacity Cranes and Runway for Material Handling in Connection With Progressive Movement of Cars.

Competition for Ships

Use of airplanes for delivering fruit and flowers is increasing in Europe, according to a report by the commercial attache at The Hague, Jesse F. Van Wickel, received by the department of commerce. The statement follows:

Airplane delivery of fruits and flowers, established last year by the Royal Netherlands Air Lines, is meeting with increased success, according to the company's report for June. A total of 75,000 kilograms of strawberries were carried to London and other cities. On some days 1,000 kilograms of cut flowers were transported to Paris. Passenger traffic rose on all lines, generally in outward but also in inward direction. Passenger traffic to London increased 100 passengers as compared with the same month last year. There is a regular increase in mail traffic. During June, 1930, the K. L. M. and four foreign companies carried 4,007 passengers, 17,928 kilograms of baggage, 143,877 kilos of merchandise, 12,873 kilos of mail and 7,204 kilos of parcels post.

Los Angeles Harbor

No port in the world has equaled the growth of Los Angeles harbor since the close of the World War. This growth indicates an increase of 37 per cent in tonnage, 87 per cent in valuation, and 48 per cent in traffic.

United States Shipping Board

This View of the Chicago & North Western's New Office, at the Corner of Sixth and Hill Streets, Opposite Busy Pershing Square, Was Taken Very Early in the Morning, Before the Iowans Had Begun Their Daily Tour of Admiration.

Proper Locomotive Care

THE manner in which enginemen can assist in bettering the locomotive performance marks is explained in the following excerpts from a talk by D. J. Ayers, supervisor of locomotive performance, delivered at fuel meetings held at various points on the Boston & Maine Railroad system. He said:

"Our engineers stand no different today in their profession than other professionals, be they the doctor, lawyer or banker. It has been and is necessary now to keep up with the march of progress in all work. An engineer does not need to think back far for a comparison between engines which he served apprenticeship on and the Lima or Pacific of today—general principle the same, but size and appliances much changed. Not so far back he cleaned and repaired 'her.' At present, in nearly all cases he receives her ready for a run and it may be a long run. It is the duty of the maintenance forces to know and be sure she is ready for the struggle ahead. It is a good start for Mr. Engineer to have confidence in his engine that she is ready.

"Oiling by the engineer will soon be gone. Modern methods lead to grease under compression good for a two- or three-hundred-mile run; mechanical lubricators relieving him of adjustments of the older type and constant observance in cab.

"Public service today is critical. The railroad guarantees on time delivery and delay means, if continued, a loss of business. A loss of business means less work for us all as workers. The engineer operates to the very best of his ability to get the greatest efficiency out of his engine —time, speed, and money count. He should also study the engine. They have peculiarities like human beings. An engine pumped for water in a conservative way and supply graduated as demand requires, is sure of a good fuel figure. Major defects are found that are prohibitive to good operation by the engineer when working the engine hard or at high speeds. He is in a position to bring this condition to the terminal where such defect could not be found.

"The interest shown by the engineer in caring for his work discovered on road in proper reporting at terminal on arrival may mean an avoidance of failure on next trip out. While many appliances have been brought into service in late years that are mechanically operated they must have the care and attention of the engineer at all times to be successful. As engineers, we would say 'feel her out'—if she don't act one way, try for a better. Any subject on engines that is bothersome is worth talking about and is bound to be corrected. It may appear at times that corrections are slow in coming. This should not deter us from plugging at the subject until it is whipped into shape. They say 'once an engineer, always an engineer.' I think this is true. Realizing what the engineer can do in a general way to keep power good, be it a small or major defect, it is our duty to get it into the records for correction.

"It is one of my duties to remind our supervisors that we are to help in all ways for better engines and enginemen—to make our game of more interest and uphold the tradition of years that Boston & Maine engineers are the best of the country and they know and handle power right.

"As our railroad grows better day by day, we are bound to claim the honor of a job well done along with other professions that may keep abreast but cannot beat us out to the wire."

C. & N. W. New Office at Los Angeles

It may not have any very important bearing on the future prosperity of the Chicago & North Western Railway's passenger business, but any way the first ticket was sold to Miss Anita Page, one of the Metro-Goldwyn-Mayer stars. Moreover she was induced to stamp the thing herself, a little task that left the first purchaser weary, for stamping a ticket nowdays, if you are going farther than Santa Barbara, is a man's job.

The new offices are in one of the busiest sections of Los Angeles, at the southwest corner of Sixth and Hill streets, opposite beautiful Pershing Square, and next door to the Detwiler building in which *Transportation* has its home. In every way the offices are equipped to the last detail in a thoroughly modern, but nevertheless, very business-like way. All the appointments are of the finest modern (or perhaps it should be spelled *moderne*) design.

The opening, early in October, was attended by city and county officials, representatives of the Chamber of Commerce, and numerous business men and railway officials. Floral contributions made the place resemble the opening of a new bank or a Hollywood premier. C. A. Cairns, passenger traffic manager, and Allen R. Gould, assistant freight and passenger traffic manager, both of Chicago, were present. E. H. Lamb, general agent in Los Angeles for the last 23 years, is in charge of the office.

"The government needs more business men and fewer politicians."—*Thomas A. Edison.*

Editorial Comment

When Good Thinkers Get Together

A TRUCKING company in Los Angeles advertises 15-hour freight service to San Francisco, 480 miles away. This is faster service than railroads offer, and the rate is lower. Passenger buses, the finest product of the factories, making very nearly as good time as one railroad's fastest train, will carry you to San Francisco for less money. The night buses have berths for 15 or 16 persons, almost as wide as a single bed, and passengers may turn in, and sleep, maybe. We have 24-hour mail service by air transport now from coast to coast. Those planes will be carrying passengers before another spring has come. No railroad train ever will go that fast, and we ought to be glad of it, too.

But the conditions and the competition described in the foregoing paragraphs are facts which must be considered when men talk about the Locomotive of Tomorrow. And such facts received little attention in the learned papers read before the Traveling Engineers' convention last month. R. H. Aishton's absentee paper came near it. So did another one read before the Roadmasters' Association in Chicago by L. C. Fritch, vice president, operation, Rock Island Lines. Said Mr. Aishton's paper:

"A recent survey of economic trends in this country during the last ten years showed there had been no revolutionizing inventions, no new and hitherto unknown and untried methods. But that survey did show that the outstanding fact in this period of apparent radical changes was the more rapid pace, the increased 'tempo' of business activity. Speed, the saving of time, is what business wants. Locomotives of Tomorrow must, if successful in competitive struggle, meet this demand. More power and greater speed are first necessities."

Mr. Fritch told the roadmasters that with airplanes flying 150 miles an hour or more (and they are doing better than this nearly every day) railway speeds of 60 or 70 miles an hour are slow in comparison. He might have added that the 40 or 45 miles an hour made by motor buses and trucking lines are something very real for railroad managers to consider. Looking the country over you will find few trains anywhere, passenger or freight, making such speeds.

Silas Zwight of the Northern Pacific had the right slant also, when he said that improved transportation in the future must be achieved by providing better service, faster trains. This, necessarily, means that railroads must have better motive power to overcome growing competition. Whether this means larger or smaller, heavier or lighter locomotives is a matter for the brains of the railroads to decide. No editor is going to do it. All he can do is report the public mind in action.

The fine, patriotic service of the railroads in developing the continent is not remembered by shippers or passengers. They don't care a whoop about railroad taxes or what per cent of this or that material the railroads bought in a year. All the public cares about is service, and it wants it fast and cheap.

The belief of some perfectly sensible railroad managers that transportation of all kinds by right belongs to the railroads has no solid foundation. No part of the public cares very much whether railroad stockholders ever see a dividend this side of the pearly gates. Service with a smile, service with speed, service with safety—these are the public demands. Whether these things can be provided with the present locomotives or the Locomotives of Tomorrow or the Day After Tomorrow is a question for railroad managers to answer. And it is some question.

The Westinghouse Memorial

Speaking during the ceremonies attending the dedication of the Westinghouse Memorial at Pittsburgh, October 6, James Francis Burke, one of the really great orators of these talkie days, pictured the famous inventor's life as a valuable guide for growing young Americans. One wonders, with Mr. Burke, whether the world in general ever fully appreciates the great geniuses who have done, and still are doing so much for the comfort and happiness of the race. It is to preserve their names and the glory they won that these fine memorials and tablets are set up here and there. Pittsburgh is particularly fortunate in having the magnificent artistic production of Daniel French and his accomplished associates for Schenley Park. It will stand forever.

But how about the millions outside of Pittsburgh who never will see this memorial? Will generations yet to come, millions of whose boys and girls and men and women may never have the ineffable delight of seeing Pittsburgh—will they know the honored name of Westinghouse?

We had an experience the other day with a youth of 20, employed by an engraving company. Showing him a photograph of the Westinghouse memorial, and telling him that many of the nation's great and near-great had gone to Pittsburgh to pay tribute to the inventor's name, we added, "Of course you know George Westinghouse, don't you?"

"Sure," replied the young man of today. "He owns a building down on San Pedro street."

It won't do to let the names of these men perish outside the cities where they lived. Every grade, or possibly every high school, should have simple little biographies, in story form, for the rising generations. No boy or girl should come to his majority ignorant of the work done for the race by Westinghouse, Edison, Marconi, George Washington. The Father of His Country led the forces that gave the Nation freedom. These great inventors directed forces that gave the Nation light and safety and wireless communication. These achievements freed the people of the world from drudgery and darkness. They should never be forgotten.

The Old Bogey "Guarantee"

In an editorial printed October 6 the Wall Street Journal makes the old and very troublesome error of referring to 5¾ per cent as "the *guaranteed*" reasonable return. The Wall Street Journal is, very naturally, friendly to the railroads, as are most sensible papers or persons, but it adds to the railroads' troubles when

it makes this tiresome mistake. It is time that editors, especially on financial papers, should read the Transportation Act. For more than ten years the railroads have tried vainly to make the public understand the falsity of this common and irritating belief that they have a guarantee. The only guarantee the railroads have is to the effect that they will not be permitted to earn in excess of six per cent and keep it. Five and three-quarters per cent is what the commission held would be a reasonable return. Fifty per cent of anything in excess of six per cent must be turned over to the government for a sinking fund from which loans may be made to less fortunate roads. This is called the Recapture Clause, for some reason no human being ever has been able to fathom.

A Needless Waste

Freight claims paid by the railroads during the first six months in 1930 growing out of loss and damage to freight shipments amounted to $19,274,899, according to reports for that period from the carriers to the freight claim division of the American Railway Association.

Claims paid during the first half of the year were an increase of $764,861 over the same period in 1929 but a reduction of $545,324 under the same period in 1928.

For the first six months in 1930, reductions under the same period in 1929 were shown in the amount of freight claims paid for loss and damage growing out of the shipment of 18 classes of commodities while 19 showed increases.

Nineteen million dollars paid out for loss and damage is a rather heavy payment for what is, in most cases, the result of poor railroading, poor handling of air, extremely rough handling of rolling stock. This is nineteen million dollars that belong properly to the net railway operating income. As lectures, warnings, and every other form of preventive has been used to stop this needless expense it begins to look, to persons on the outside looking in, as if some drastic punishment will have to be applied. In almost every industry the man who breaks something through carelessness is made to pay for it. Railway employes themselves ought to realize that with competition cutting down the revenues of their employers it will be necessary one of these days to establish some direct relation between wage scales and loss and damage payments.

Where Language Fails

There are 120 adjectives in the English language descriptive of foolishness or stupidity, and 63 nouns related to persons or adjectives in the same class. Use all these 183 words and you will still find it difficult to say just what you think about the men and women at the wheels of motor cars concerned in a recent investigation in Canada. The railway board up there says some of the accidents under scrutiny were caused by "inexplicable negligence," which sounds pretty good, but still falls short of what the situation seems to require. The supreme court of Japan called such persons "idiots."

In three years, the report says, there were 1,791 grade crossing accidents 714 of which were caused by the drivers' failure to see the stop signals. This leaves 1077 drivers who actually did see the signals, but not quite soon enough, to judge by what was gathered up afterward. The investigators show some peculiar irritation because 77 motorists drove under crossing gates while they were being lowered. The board lacks in appreciation. Any thoughtful person might realize that, obviously, the purpose was to get through without smashing the gates. The soundness of this reasoning is shown by the report itself which says that one driver took the trouble to get out of his car and raise the gates to avoid breaking them, a fine consideration for company property. However, the man's thoughtfulness seems to have been lost on the engineer of an approaching train who failed to see the motorist, and accordingly struck him so violently that he landed on the market page of the evening paper.

The report makes casual reference to nine pedestrians who climbed over or under the gates which had been lowered by the watchmen in obedience to rules. Had it not been for these gates the nine walkers might have crossed the tracks uninjured. As a result of this interference they were delayed so that they arrived on the rails just as trains were passing. No arrangements having been made for the parade the trains failed to stop, and the nine pedestrians got more space in the papers than if they had died of any of the innumerable things lying around nowdays for such purposes. And this, we suppose, the Canadians consider "inexplicable negligence."

The Canadian railway board missed the point entirely in the next item. Blame is attached to 69 motorists who drove their machines into the sides of moving trains. Forty-three others had the same experience with trains standing over crossings. Naturally, these motorists expected the tracks to be clear. If trains are to be left lying around this way what is the use of going driving? Maybe the wise railroaders can answer that one. However, there they were, late again, and there also were the motor cars, and what happened was what Amos 'n Andy call a mess.

Eight motorists accustomed to using street car tracks as a highway—and why not, may we ask?—tried it on the railroads in Canada only to be bumped and pushed here and there; five tried to turn their cars on the tracks, having suddenly changed their minds about where they wished to go. One poor chap, worn out watching for signals and listening to the tiresome whistling, stopped his car on the tracks to take a little nap, waking, doubtless, with the words, "Saint Peter, here I am."

When will motorists learn that it does no good to blow their horns or wave their hats at the engine crew? The trains simply go right on, paying no attention. Every reasonable precaution has been taken, it seems, to prevent accidents, but still the trains continue smashing automobiles and people. Men leave home in automobiles and come back in boxes. The money spent for warnings, campaigns, signal devices, slogans, Cuss Crossings Constantly, might better have been used for pee wee golf. Never, we fear, will men believe what the world's greatest scientists have proved, that two objects, traveling in opposite directions, at great speed, can not pass each other on the same track without the most annoying delay, or worse.

All in all, as Justice Holmes has so wisely observed after 93 years of the closest study, a railroad track is a dangerous place for insurance companies. Unless we are very much mistaken, which seems ridiculous, our courts must follow the example set by the Supreme Court of Japan last month in dis-

posing of damage suits arising out of motor car fatalities. In the future, that court said, heirs of such persons will have no claim against any railway. If you think we are callous and facetious you might send to Tokio for a copy of the latest decision.

However, the situation might be much worse. Instead of worrying over the large number of persons killed why not remember, joyfully, the many who escaped? The census shows the population to be 122,698,190. The 31,500 who were killed in automobile accidents was or were only .0025 of one per cent of the population. When we remember there are 27 million automotive vehicles registered in the United States, and an unknown number owned by bootleggers, the record really doesn't seem so disheartening after all.

Millions for Negligence

Elsewhere something has been said about the millions spent by railroads in paying claims for loss and damage. There is another costly leak: the millions spent in trying to save the lives of motorists. In 1929 it cost the roads $28,445,680 to protect life at grade crossings. Of this amount $25,113,338 was spent for the separation of grades, while $589,941 was spent for the abandonment or removal of highway grade crossings. In addition, the railroads during the past year spent $2,742,401 for the purchase and installation of mechanical and other devices designed to warn motorists of approaching trains and for gates, signs and other things intended to bring about increased safety at highway grade crossings. Put the two sums together: $19,274,899 and $28,445,680, and what do you get? You get a total of $47,720,579—the cost of negligence.

All those millions were spent for protection at grade crossings. How about the cost of safety work in general? In 1929 Class 1 roads spent $298,000,000 trying to protect employes and the public according to A. R. A. reports to the Interstate Commerce Commission. Of this big total, $193,808,132 represented capital expenditures made for the improvement of safety and protection; $94,790,334 represented the cost of operating signals, protecting crossings and expenses of safety organizations, and $9,000,000 was spent for a wide variety of other purposes designed to bring about increased safety. When you read about such enormous expenditures you cease to wonder about the vanishing net return.

Economy in Air Express

The intelligent use of air express is a means of saving a great amount of the annual loss in American business due to transportation, according to a statement by Robert S. Clary, chief of the editorial section, aeronautics branch, department of commerce.

The waste in the conduct of American business every year, which has been estimated at $8,000,000,000 to $10,000,000,000, equals the whole amount of our foreign trade last year, Mr. Clary said. The part of this waste ascribable to transportation can be reduced greatly by speeding up the movements of money, securities, and valuable merchandise, and cutting down the time lost in transit.

To date, he stated, air transport lines, which constitute the backbone of commercial aeronautics, have confined their efforts largely to mail and passenger carrying, but various government officials and leaders of industry predict that further development of air express in the immediate future is extremely likely. Not only can emergency shipments of all types be made to replace depleted stocks of merchandise, but such shipments can be used as well to effect major and minor repairs of machinery.

A number of merchants are finding that the use of aircraft is giving them a distinct advantage over competition by enabling them to get new merchandise on display with the least possible delay after it has been manufactured.

Faster transportation will save interest on money, securities and goods in transit and will facilitate the shipment of style and perishable merchandise, Mr. Clary said.

Bankruptcy If Railroads Quit

Back in Indiana the tax authorities are badly worried because steam railroads have applied to the state railroad commission for permission to abandon hundreds of miles of track. Thirty applications are on file asking authority to discontinue station agencies where no business exists, or to close the stations. A member of the commission said railroad officials had told him the applications were the beginning of a program looking to the abandoning of all non-profitable branch lines. Such action, the member said, would mean bankruptcy for counties depending largely upon railroad taxes for their support. In one case before the commission these paragraphs were inserted by one member in an order permitting the removal of an agency, but were not approved by the others:

> "If the reduction of revenues for this service is to be construed as the policy of the public to make less use of the railroads for passenger and freight service from now on and to make greater use of the bus and truck for these services, the final outcome may now be forecast.
>
> "If the public is prepared to see the short lines removed from the state's taxable property and the rail roads find no alternative, the commission will have to accept the situation with keen regret."

Caleb McIntosh, a member, suggested as a remedy the bringing of bus and truck lines under complete jurisdiction of the commission to the same extent as railroads and other utilities.

A member of the state board of tax commissioners, Phil Zoercher, suggested that bus and truck transportation lines should also be under the tax board's jurisdiction for assessment and that legislation should be enacted so that the counties through which the motor lines operate may levy upon them.

The assessed valuation of all steam railroads in the state in 1929 was $534,372,168, and this was increased by the tax board this year, Mr. Zoercher said.

State Has the Right to Regulate

The public interest requires that all forms of transportation should be taxed and regulated on an equitable basis. The railroads ask no favors for themselves, but only that competing forms of transportations should be dealt with as the railroads are.

In a recent decision of the supreme Court of Georgia, upholding the motor carrier act of the state and the right of the Georgia public service commission to regulate motor vehicles, Justice Gilbert says:

> The effect of the growing business of operating motor vehicles for hire on the public highways must be apparent to every man of ordinary sense. Courts cannot be blind to those things which are apparent to every citizen. The construction and maintenance of

the public highways is of vast importance to the happiness and prosperity of all. Upon our public highways are expended immense sums of money, time, labor, all of which must be supplied by the general public. The congestion, to say nothing of pure accidents and negligence, is exacting a toll of human lives and destruction of property that is appalling. It constitutes an increasing menace. The size and weight of such motor-vehicles constitutes an extra burden on the wear and tear of highways, and adds to the dangers. It is unthinkable that the sovereign State cannot lay its hand on the traffic for the purpose of regulation, control, or even prohibition where regulations are not obeyed. Such is a necessity for the public safety and because of the heavy burden of construction and maintenance. The State's constitutional power to tax and to regulate private operations of automobiles using the public highways is in this day nowhere denied.

By All Means Let's Try It

Airplanes, used for so many purposes, are now part of the tax collector's equipment in Algeria. In that country inhabitants are assessed on the number of palm trees they possess, and this method of computation is reported to have provided an immense saving in time. An added advantage is also seen in the fact that eventually it may result in reducing the number of tax collectors in that country. Surely, if for no other reason, let us provide planes in this country if the number of tax collectors may be reduced. Then, too, there is always the hope of a crash.

Whale of a Story

Three California men have sued the Santa Fe Railway because that line, usually keen for traffic, declined to accept a whale for shipment to San Diego. The company entered a demurrer, which was overruled in the federal court at Los Angeles. The defense contends, the report says, that there is no tariff on whales, especially 60-ton whales. This one had been emptied and then stuffed for exhibition purposes. The city of San Diego got into a row with the Republic of Mexico one day last summer, and almost caused an international situation by dumping a stray dead whale on the coast of that neighbor. There ought to be something about whales in the Act to Regulate Commerce.

A Good Customer

Ordinarily, most of the publicity one sees about chain stores is extraordinarily ordinary. But when we learn that the Great Atlantic & Pacific Tea Co., which has just opened nine stores in Los Angeles, has shipped more than 200,000 cars of groceries over the railroads in the last year we think every railroad employe ought to be interested. This company, new on the Pacific Coast, pays nearly $25,000,000 in a year in freight bills, and the railroads get it. This is almost enough to pay the loss and damage claims for 12 months.

Air Mail Service Grows

Within the next month the postoffice department will be distributing mail by air over 34 routes covering more than 36,000 miles. During September contracts for three routes were awarded. One route will transport mail by air to Central and South American destinations. The other two are transcontinental routes in this country. These three lines will increase the present mileage covered by air mail by nearly 8,000 miles.

At present the 24 operating routes in continental United States cover a mileage of approximately 15,000 miles, and the seven operating routes to foreign destinations cover a mileage of approximately 13,000 miles. When the three new lines are placed in operation the one-way mileage over continental United States to be covered will be approximately 19,000 miles, and over foreign routes more than 16,500 miles.

A Warning

Information has come to this publication that certain photographers are soliciting railway executives and other persons as representatives of this magazine. This company employs no photographers. Reputable firms specializing in the work of photographing railway officials receive proper credit when portraits are used by this magazine but such firms are not authorized to use our name.

They've Heard About It in England

The London & North Eastern has put on two new type sleeping cars, a cable news letter announces. These cars have bedrooms with full size beds, a bit larger and possibly more comfortable than those adopted on several roads in this country a few years ago. The Baltimore & Ohio uses rubber pads to deaden shocks, but the English line packs the car roofs, floors, and sides with asbestos felt. Also, there is a new system of ventilation, the principle of which is to force a current of hot or cold cleansed air into each bedroom, the direction, volume and temperature of the air being controlled by the passenger.

An electric generator below the floor of the car, driven by a belt from the wheels, supplies current for lighting, ventilating and heating water. The floors are covered with sponge rubber and carpeted, and the fittings and furniture embody many new features.

Here's the Record

As a contribution to switch shanty arguments, let it be recorded that when the French aviators, Coste and Bellonte, flew from Paris to New York, last month in the Question Mark they made the fourteenth conquest of the North Atlantic by airplane; the fifth westward flight, and the first non-stop airplane trip from Europe to the United States. The non-stop flight from Newfoundland to Ireland, made in June, 1919, by Alcock and Brown in 16 hours and 12 minutes, still stands as the speed record across the Atlantic.

Long, Long Ago

"Our friends in Paris, in a little time, will come flying through the air, instead of plowing the ocean, to get to America."

There were men of broad vision 150 years ago in matters scientific and mechanical as well as in questions of government. The foregoing paragraph was written by George Washington in a letter dated some time in 1774, says Henry Woodhouse, president of the Aerial League of America, quoted by the New York Times.

Little Stories About Big Men

Grant Hall
Vice President, Canadian Pacific Railway.

TO SET DOWN in these endless chronicles of men a few words about Grant Hall, executive vice president of the Canadian Pacific Railway, is one of the pleasant tasks that make an editor's day worth living. We have met in our time a good many big men. Some were giants physically, but nothing much to write home about when it came to other qualities. Some were little chaps, if one thought only of feet and inches, but marvels in mental equipment. Once in a blue moon, or maybe two or three times, we have met men who were big all over, and especially between the ears. Usually these Mountain types were mild-mannered, soft-spoken most of the time, rather self-effacing gentlemen who got things done without any great amount of noise or bluster, by the power of their strong personalities.

Grant Hall is all these things, and much more. Mulling over our memories of the man it seems that his stature never did appeal to us more strongly than the day we learned that he played a bum game of golf, and admitted it frankly. Now, golf has nothing to do with railroading except, perhaps, in the traffic department where almost anything may be used, within the limits of laws and morals, in the interest of revenue loadings. But when you find a man big enough, courageous enough to describe his game truthfully, you have found one competent to assume the trying duties of an executive vice president of a very great railroad—and perform them.

He was born in Montreal in November, 1863, and started his railroad career as an apprentice machinist for the Grand Trunk Railway, in 1883, when he was about 20 years old. This was in the Point St. Charles Shops, Montreal. Four years later he became a locomotive foreman for the Canadian Pacific Railway, a job he kept for six years when he left to become general locomotive foreman in the service of the Intercolonial Railway, at Moncton, N. B. He returned to the Canadian Pacific as general foreman in 1898, first at McAdam and then in the Winnipeg shops. Thereafter, he was, successively, master mechanic of the British Columbia division; assistant superintendent of motive power eastern lines; and superintendent of motive power and car department western lines. He was assistant general manager from 1911 to 1914 and in the latter year was made vice president and general manager of western lines. He has been vice president of the system since 1918.

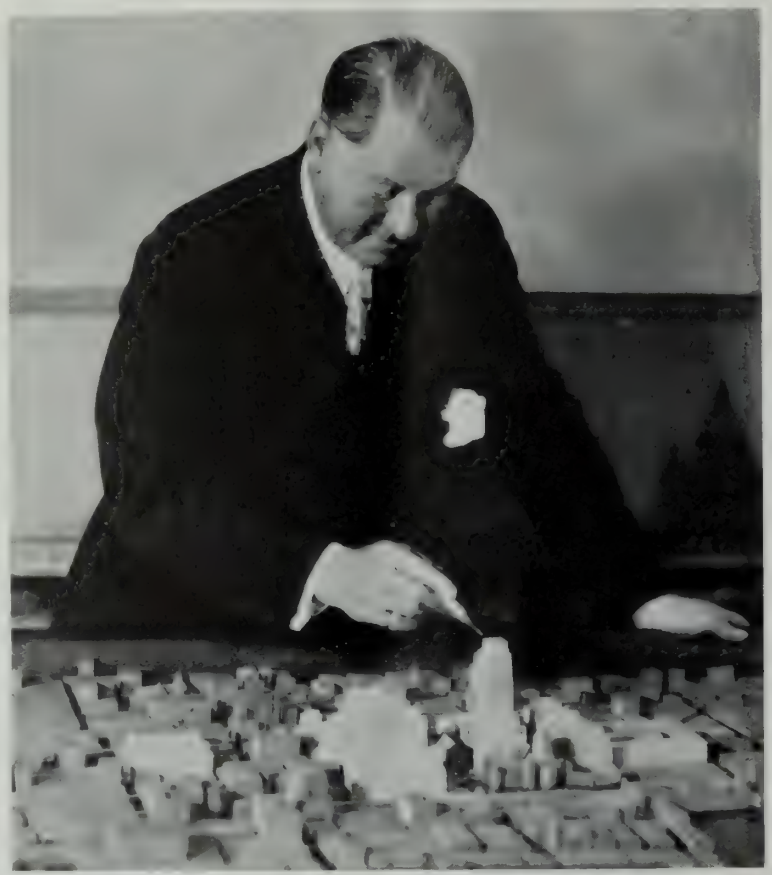
We said a moment ago that Mr. Hall is big, but it is worth repeating because his is a great frame, expressive of rugged strength, the power to do things and get things done. There is a bit more than six feet of him. He weighs in at 200 pounds or more; his hair is turning gray, and he looks at you with gleaming brown eyes set in a face furrowed by the winds of Canada from coast to coast. Doubtless the responsibilities of a first lieutenant in one of the world's greatest privately-owned transportation systems have added a line or two; why not?

A strong man this, and a bad one to trifle with, yet there is a promise of kindliness and understanding in his eyes, which, if anything, strengthens the determination of an otherwise rather stern countenance. That Grant Hall is a leader of men is proved by

his position as the executive vice president of the great company with which he is associated. His record constitutes proof of his capabilities and his faculty for applying them.

His viewpoint of life can best be summarized perhaps, in his own words, used in answer to a recent query as to the secret of handling men. He said: "Be gentlemanly, firm and fair." He is all these things. He is also far more human than anyone ever will be able to make him admit, and consequently he is intensely popular among the 100,000 employes of the Canadian Pacific.

His humanity is typified in the admission we mentioned, that he plays a poor game of golf. The classification makes him one of the many; his admission of it one of the few. He is like that; but one must remember that he played tennis, really played it, for years, until his medico bade him seek some less strenuous form of exercise. So today he goes round, smiling and quiet, just as he goes round the company's system from coast to coast, and knows everyone on it and every nook and corner of it.



Sir Henry Thornton, President and Chairman of the Canadian National Railways, Inspects the Model of the Fifty Million Dollar Terminal to be Built at Montreal.

Mr. Hall is classically efficient. When he began to work for a living as an apprentice his brain already had begun to function properly as a result of his training at Bishop's College School, Lennoxville, Quebec. That training gave him a broad viewpoint which some men never have and don't know it. It gave him also the ability to realize the dignity of labor. You begin to hear tales about this part of his character when you enter his territory. One of these has to do with his taking a shovel one day and putting in half an hour on a big snowdrift, to show the men working on it how the job should be done. He knows, does this vice president. He has done many jobs in his time and done them well. Nobody can tell him anything about practical railroading.

He is "Grant" to a good many of the older employes of the system. They know him and he knows them. He has a retentive memory, the gift of closing up the years between, when he meets an old crony. Canadian Pacific servants like and respect him. There is no nonsense about Grant Hall. Wherever his huge bulk is seen it is taken as typical of the road and its creed: big and efficient.

Sir Henry Thornton, an Indiana-born farm boy who became a British baronet in recognition of his conspicuous service in converting British rail lines and war-time railways of the allied forces into working transportation lines, doesn't show much enthusiasm about railroad consolidations in the United States, as suggested by certain political interests.

"The best thing I can say about this movement to merge American railroads into a few great systems is its lethargy," declared Sir Henry. "It doesn't seem to be making much progress. Now, it most distinctly isn't *my* job to talk about it. I've a good job here just minding my own business. But, if you insist—"

"Sure, Sir Henry, shoot," said the visitor.

"Well, there's a limit in the railroad business at least, beyond which expansion of enterprise and mass production does not make for efficiency but for inefficiency. And, I'll tell you why.

"A railroad is a very individual kind of business. It's a living organism, spread out over an enormous territory. The thing's alive. If you watch a railroad you can actually see it breathe. You can see it move. Perhaps, if you look close enough, you can even see the spirit that animates it. The principal part of that organism is not the railroad's physical equipment; it isn't the tracks or rolling stock, or buildings, or that sort of thing. It isn't even the capital invested in the road. The principal part of a railroad is the men who work on it; the men who move the trains and direct their movements, who keep the tracks clear and all the working equipment in order.

"A railroad is just as good or bad, strong or weak, as the men who work on it. The spirit in which they do their work determines the character of the road as a whole.

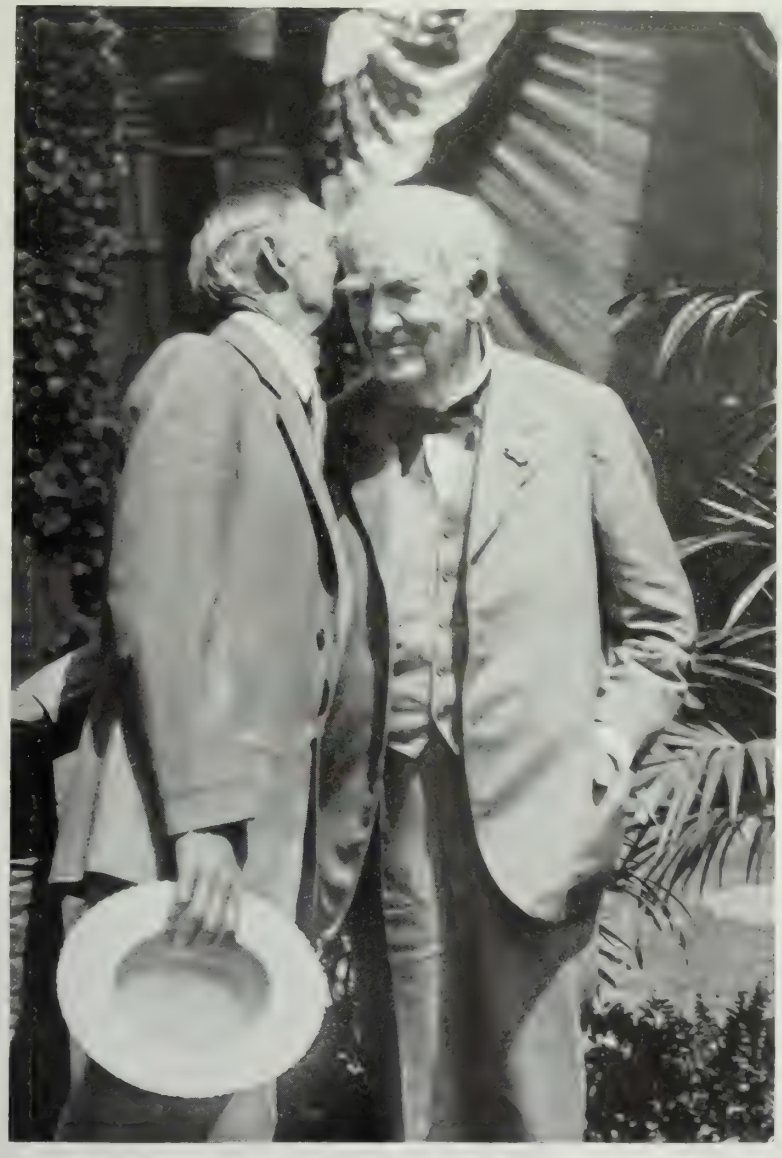
"In an ordinary factory you can have adequate supervision of labor. You can set the standard of it definitely, and can keep your men up to that standard. No head of a railroad can do that. The head of a factory can look out of his window, or take a short stroll, and see about all of his production force at work. You can't do that on a railroad.

No one sitting here as I am, in Montreal, can tell how a railroad man in Calgary or Halifax, is doing his work. No system of supervision can be devised to keep railroad men doing the job properly unless they want to do it properly. To get them to *want* to do their job well there must be a very human and personal relationship between the of-

ficers of the road and the men who run the trains.

"The difficulty with enormous enterprises is that all personal relationship between officers and men tends to be crushed out. The boss gets to be an impersonal czar, far off in the distance from the men who are moving the trains. And the inefficiency of discontent and misunderstanding creeps in."

And Sir Henry ought to know what he is talking about, after his conspicuous experience with the Pennsylvania, the Long Island, the British State Railways, not to overlook what he has done for Canada's railroads over which he assumed leadership nine years ago. In those nine years he has whipped the united Canadian National Railways into America's longest, and not least efficient, railway systems. What a few years ago was accepted as a legacy of folly, something to be accepted resignedly and to be borne, Sir Henry whipped into a going and a paying railroad system. Steamship lines to the British West Indies, to Australia; a fleet of palatial ships into the coastal service; modern hotels on the line between Halifax and Vancouver. After converting the property from a taxpayers' "sapping system," which consumed millions of dollars of government funds yearly, into a system that pays its way, Sir Henry gives it as his determined opinion that it is just impossible to force, by political means, unwanted rail children into the crib of a growing railroad child and have a happy, prosperous family. Still, there are those who know less about railroads than does this towering toiler, who declare that it can and should be done. Railroad men have their endless problems. Consolidations, it seems, are part of the big job.



Henry Ford and Thomas Edison in Conference. "It Seems There Were Two Irishmen," said Henry to Tom.

THE BASIS of any merger of American railroads should be scientific information, not political manipulation, says John E. Muhlfeld of New York, member of the American Society of Mechanical Engineers, a well known designer of locomotives and consulting engineer in a number of large projects. Ever since he assisted in pulling Schenectady No. 1 across a field from the Big Four line to the world's first locomotive test laboratory at Purdue University in 1891, Mr. Muhlfeld has been devoting his thought to making our transportation lines more efficient.

This engineer opposes the suggested Interstate Commerce Commission plan of creating an impossible, unwieldly system of networks, and tells us that, "Existing railroad systems are the outgrowth of orderly and natural combinations of different companies in a gradual process extending over a long period. As an example," he pointed out, "take the Pennsylvania Railroad System, a combination of more than 600 companies.

"In our economic life, up to the time of the Transportation Act of 1920, the services rendered by the railroads to the public had increased vastly more than either the population or the railway capital. For example, from 1890 to 1920 the ton mileage increased 443 per cent, and the passenger mileage 300 per cent, against 68 per cent for the population, while the investment in road and equipment increased only 156 per cent, thus showing that capital had not grown nearly so fast as the service rendered.

"Railroad consolidation and prohibition have now been definitely with us, as two of our uppermost national problems, for ten years. With respect to the former, the Transportation Act has thus far not accomplished any of its three principal objectives, i.e., (a) the recapture of excess earnings to be used as a fund for weak roads; (b) a fair rate of return upon aggregate value of railroad property has been reached in only one year, and (c) the consolidation of the railroads is as yet unfilled. To justify combinations of lines as now owned and operated, the consolidations should, in whole or in part:

"1. Be consistent with the public interest.

"2. Provide better service to shippers and travelers.

"3. Establish lower rates.

"4. Maintain constructive competition.

"5. Produce greater economy in upkeep and operation.

SUCH consolidations should combine interstate railroads that will be of reciprocal advantage to one another, which will establish improved means and methods for the movement of traffic, simplify routes and rate structures, promote efficiency and economy, and continue healthy transportation competition. Price variations between localities come from natural competitive conditions which should be allowed their full and free play. Constructive competition, unrestrained, without statutory interference, will insure more normal and natural prosperity, and promote public welfare. It means fair prices, and the freer the competition the fairer the price.

"With respect to the intrastate railroads, what the state wants and takes the state should pay for. If no railroad system is willing to assume the risk of ownership of such lines, and there is a real necessity for their operation, they should be subsidized by the state and the losses made good out of taxes. This is in accord with the Constitution.

"The Transportation Act completely reversed the government's policy as embodied in the Sherman Anti-Trust Law, preventing many orderly combinations which otherwise would have been made. The consolidation plan is based on unsound reasoning as, unless some favorable, new and pronounced operating or other conditions are introduced, the advantage to the weaker lines will be to the disadvantage of the stronger ones. Why should the stronger lines be weakened because of the mismanagement, lack of foresight, or because of insufficient or undeveloped traffic resources of the weaker lines with which it is proposed to affiliate them?

TO INSURE profitable operation of weak lines, intrastate or interstate, under a group system of tariffs, by arbitrary unification with stronger lines, is making them a charge on the latter and is socialistic and in violation of the protection afforded by the Constitution.

"We now have in the United States about 850 operating steam railways, of which about 55 have more than 1,000 miles of line. The total lines operated consists of about 263,000 miles with 1,750,000 employes, 63,250 locomotives, 2,350,000 freight cars, and 55,000 passenger train cars (exclusive of about 9,250 Pullman cars). The investment in railway property in 1928 was about $25,000,000,000, and the net total capital stock and funded debt outstanding was $23,750,000,000. The net capital, exclusive of stocks and bonds owned by the railways, was $18,500,000,000; the stock-paying dividends amounted to $7,150,000,000. The railway operating income, before taxes, interest and dividends, was approximately $1,300,000,000, and the tax accruals were over $395,000,000.

"Since the enactment of the Transportation Act and the return of the railroads to their owners, there has been a decided improvement in the railways as a whole which accounts for the lessened interest of the general public concerning the proposed railway consolidations.

WHILE railroads are compelled to battle against rising wages, price of materials and supplies and taxes, their tariffs are declining. It has only been through their ability to increase traffic and operating efficiency, and by improved facilities, equipment, materials and supervision, that they have been able to improve their economy and maintain their credit.

"However, a freight car now loaded at any point on a rail line can be just as expeditiously moved, intact, to any other point in the United States, Canada, or Mexico which is served by a railroad, as if all the railways were consolidated into one national transportation system. The consolidation of the United States railroads for operating purposes during the World War period certainly did not produce this service, even under the freedom of regulatory requirements and at the high cost of operation. The final net cost to the people of the United States for this great venture was $1,696,000,000. During the 26 months of federal control, the government spent about $1,125,000,000 more than it took in as freight and passenger charges and for other service rendered. In addition, the government guarantee of earnings for the six months' period after the release of the railroads from federal control cost it approximately $535,000,000.

"The loss of the advantage of competition between the roads, and a highly centralized management, during federal control, contributed largely to the deterioration of the roadway and equipment, as well as of the service, and increased the costs for maintenance and operation. This competition, re-created upon the return of the railroads to corporate management in 1920, has not only restored their credit, but it has brought them back to the best physical condition, and to the most efficient and economical operating condition in our history.

THE public demand is for safety, speed, convenience, comfort, and reasonable cost for railway or any other transportation, but where improved highways and the

Straightening Curves and Reducing Grades on the St. Louis-Southwestern Railway Lines. The Old Line Shown at the Right Was Part of a Narrow Gauge Road More Than 50 Years Ago. The Straight Line at the Left is the Modern Cotton Belt Built by the Present Progressive Management. Indeed This Road is Now Giving Better Service in Every Department Than at any Time in Its History. There are Rumors, As all Men Know, About a Change in Ownership.

motor truck, bus and private automobile have caused railway service and lines to become unprofitable their continued operation serves no economic purpose but constitutes an economic waste.

"The basic feature of the I.C.C. consolidation plan, handed down December 21, 1929, after nine years of deliberation, organizes the nation's railroads into 21 systems, exclusive of certain terminal properties, for the expressed purpose of securing stability and profitable operation, as well as to preserve competition. Where consolidations as outlined will be advantageous, the commission will no doubt be petitioned for permission to proceed along the lines set up. Otherwise, the plan probably will not be very far-reaching, as satisfactory rail transportation depends largely upon close and friendly cooperation between the shipping and traveling public and the local chambers of commerce, shippers' associations, and those railway officers who are in authoritative positions to learn as to the service and facilities needed, and which their patrons want, as well as speedily to adjust complaints and claims.

"The consolidations as proposed, would deprive many railroads of important traffic relations and connections that they now enjoy whereby they can exchange car supply and business, for the benefit of the communities and shippers served, with expedition and economy in operation. They would also deprive many cities and communities of the employment of local labor and the purchase of local material and supplies which they now enjoy.

"Bankers, commercial and industrial business men and their employes and the farmers, are not in favor of these gigantic railroad consolidations. The benefits from mergers are speculative and hazardous in the extreme with respect to the public, shippers and travelers in the territory served, and the business for which the lines are competing. The different regions, states, cities, and towns will, and properly, be very much opposed to any change in the make-up of the existing railroads which will affect their shipping and community prestige and interests.

"In preference to financial and academic consolidations, let us have physical combinations that will produce operating economies through lower grades and shorter lines equipped with efficient high-powered locomotives for the most economical operation and the lowest permissible freight rate, improved equipment and terminal, shop, enginehouse and yard facilities, and increased traffic and revenue train loading. Otherwise, the probability is that the advantage will be small, as any reduction in taxes, fixed charge or overhead expense will be a relatively low percentage of the total cost.

The New Official Flag Adopted by the Postoffice Department for the Air Mail Service.

For example, by constructing a relatively short line along the New River, between Rich Creek on the Virginian, and Hinton, on the Chesapeake & Ohio, using the latter line to Gauley, and the Kanawha & Michigan (New York Central) from Gauley to the Ohio River, it will be possible to cross the Appalachian Mountains at practically water grade and establish lower freight rates between the Chicago-Toledo lake port districts, through the West Virginia coal fields, and the capes on the Atlantic seaboard.

'In order to provide for the support and development of the interstate lines serving them, consolidations should be confined to a combination of non-competitive lines, the major portion of which may lie in one of the eight regions now established for statistical purposes by the I.C.C. Large unwieldy systems, in addition to lessening competition will give less satisfactory service and communication with their employes and the public, whereas in the smaller units these officers have direct and frequent contact with the local communities, and individuals whom their lines serve.

"Mere size will not insure satisfaction or economy. Consolidations of railways in the United States during the past century have been beneficial more from a financial structure standpoint than from a unification of their physical and operating characteristics.

"So long as the government does not purchase the continental railways, and assume all of the responsibilities and risks of investment and management, and its policy is one of private ownership and operation, just so long will the railway owners have their constitutional right for the protection of their property. It is hoped that some of the U. S. Supreme Court decisions will have a clarifying effect on the constitutionality of the I.C.C. interpretations, and on the many perplexing financial and operating problems confronting the owners of the railroads, in order that they will know where they stand and how they can proceed with extensive additions and betterments needed for further improving, and lowering the cost of their service to the public."

An Official Air Mail Flag

An official air mail flag has been adopted by the postoffice department and will be flown over all airports at which air mail planes stop, and above the airport building from which air mail is received and dispatched. The flag, designed by Colonel L. H. Brittin, vice president and general manager of Northwest Airways, was dedicated by W. Irving Glover, second assistant postmaster general, at the government's air mail exhibit held at the Allerton House, Chicago, during the National Air Races.

The Cost of Homes

The average cost of the 43,320 one-family dwellings in 85 cities built in the first half of 1929 was estimated at $4,902, exclusive of the land, it has just been stated by the bureau of labor statistics, department of labor.

YOU CAN'T

YOUR OLDER PASSENGER

But you can modernize them, and make them comfortable enough to meet today's demands for better equipment, if you consult with

GOLD'S ENGINEERING SERVICE

on up-to-the minute car heating.

It is well worth your time to find out how much more real use you can get from your old equipment with a small investment.

51 YEARS OF DEVELOPMENT AND SERVICE

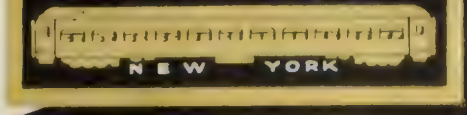
GOLD

SCRAP CARS

Gold's No. 1600 Thermostatic Valve is a real vapor valve. Investigate and see for yourself how and why it gives perfect heating with much less trouble and expense.

1. Eliminates condensation from train line.
2. Cannot freeze.
3. Requires only one control instead of two.
4. Does the work of from two to eight other valves.
5. Saves 98 to 600 pounds in weight.
6. High train line pressure unnecessary.
7. Eliminates 25% of car piping.
8. Cuts maintenance costs 50%.
9. Eliminates auxiliary apparatus.
10. Permits complete circulation in much less time than heretofore required.
11. Operating range from 1 pound to 200 with no adjustments required.

IT HAS TO BE GOOD AS GOLD



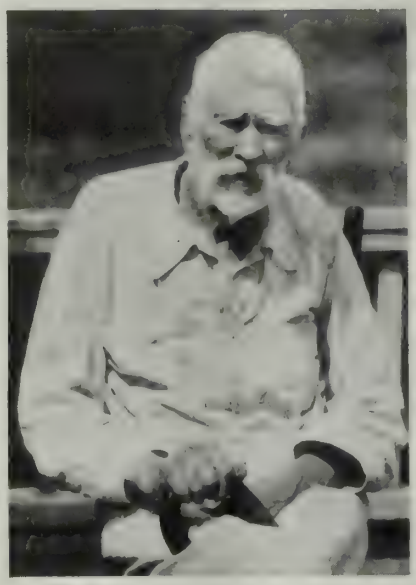
CAR HEATING AND LIGHTING COMPANY
BROOKLYN, NEW YORK.

Among the Men Who Do the Work

This Conductor is 100 Years Old

FRED SWEETMAN, first conductor on the Northern Pacific, now in his 100th year, presented to the museum of the railway company recently the first switch key used on that pioneer railroad system. Mr. Sweetman, who now lives at Red Lodge, Mont., went to work for the railway company in February, 1870, when the first excavation for the roadbed was made one-half mile west of the present station of Carlton, near Duluth, Minn. He participated in a celebration at that time marking the beginning of construction of the Northern Pacific railroad system 60 years ago. The first rails were shipped from Duluth. A few miles of track were laid in the spring of that year. These tracks joined with the rails of the old Lake Superior & Mississippi Railroad, and at the junction a switchstand was placed. Mr. Sweetman, as the first conductor, thus became the possessor of the first switch key, which now is a valued relic in the museum.

His rigid adherence to common sense railroading in the early days terminated Mr. Sweetman's conductorship abruptly in 1876 as a result of a complaint registered against him by General G. A. Custer, famous Indian fighter. Mr. Sweetman recalled that, as conductor that year, he was called upon to operate a train to buck snow drifts between Jamestown and Bismarck. General Custer's private car was attached to this train. General and Mrs. Custer were the only occupants of the car. Bucking the snow drifts, they were handled roughly, and the general demanded that Conductor Sweetman leave the private car while bucking snow, and then return to pick it up. This Mr. Sweetman refused to do because he feared he might not be able to back his engine through new drifts which might form. He did not wish to have General Custer isolated in the snow drifts. Despite insistence on the part of General Custer, Mr. Sweetman declined, and this started unpleasantness between them with the result that when the party reached Bismarck the general reported to the superintendent. The conductor was reprimanded and his service terminated. However, he was told, he said, that he would be reinstated later if he would remain at Bismarck. This compromise Mr. Sweetman refused. One of the ironies of fate was that not many months later Sweetman, who was engaged in delivering foodstuffs to the soldiers at Ft. Keogh during the battle with the Indians, was one of the first to arrive on the battlefield after the battle in which Custer and his men were annihilated by the Indians.



Fred Sweetman
Former Conductor, 100 Years Old.

In the fall of 1870 Sweetman was in charge of a work train and steam shovel engaged in building the railroad.

"The train operation in those days was by time table only," said he. The time table was printed on a small piece of paper. I recall that one time the superintendent's train had been derailed and I held my train on a siding four hours waiting for this train which had met with difficulty. When it finally arrived, I was criticized for holding the train on the siding. I asked the superintendent if he had a time table, and he said that he had one in his head. I replied that I had mine on paper, and that it did not allow me to go out on the main line track. Under the circumstances, the superintendent told me I was not a railroad man, and that I had better go back to work for the railroad from which I came, but the contractor interfered and advised the superintendent to forget that he was superintendent because he did not understand his own time table. That ended the argument."

Mohammed and the Mountain

Because it is the only organization of its kind west of Chicago and St. Louis, Pacific Railway Club membership represents a larger area than that of any such body. As a matter of fact, it has members in 20 states and several foreign countries, and it is of course impossible for many of them to travel the many thousands of miles to attend meetings.

Among those who must content themselves with attendance at a meeting now and then are the members living in the intermountain states, Nevada, Utah, Colorado, and in Wyoming. It being impossible for these men to travel the very long distances necessary to attend meetings, the club has decided, at least occasionally, to take the meetings to them. The first of these meetings is to be held at the Newhouse hotel, Salt Lake City, Saturday evening, November 15. The officers of the club and quite a few of the members have announced their intention to be in attendance. It is believed there will be a large number of railroadmen present from the Intermountain states.

How About This, Watson?

A strange story comes from San Francisco. Five-year-old Herbert Brandt, playing on the railroad tracks, failed to notice a train rushing down upon him. The engineer jammed on the brakes, but the train raced over the lad.

Trainmen ran back to pick up the body. Little Herbert was sitting up laughing and scarcely scratched. "I saw the wheels go 'round," he told the trainman.

Motorists will stop their cars to let you cross the road in safety if you are leading a cow or a horse. If you are leading a mule the cars will turn and go the other way.

SAVE TIME

SAVE LABOR

MAGOR
Automatic Air Dump
CARS

THE Magor Automatic Air Dump Car has many advantages which assure big savings of time and labor and absolute safety in every phase of dump car operation.

It will dump anything that can be loaded. The center of gravity is well within the bounds of safety at all times assuring stability on track. The body is under complete control throughout the dumping and righting operation. All violent shocks are eliminated. The car cannot dump prematurely or while in transit. The car dumps to either side without time killing adjustments. All loads are dumped clear of track ballast. Everything to save time, labor and assure safety.

Meets A.R.A. and I.C.C. requirements

MAGOR CAR CORPORATION

50 Church Street New York

Canada's Electric Railways Grow

THE volume of paid passengers in the last year on Canadian electric railways showed a growth of 3.5 per cent over the previous year; nearly 30,000,000 more passengers were carried by the 57 systems. A total of 836,729,851 fare passengers were carried who paid $58,268,980 in cash fares as compared with $55,632,761 the year before. Due to transfer privileges extended patrons, with the exception of one railway system, the passengers carried by motor buses operated by the lines are included in the fare passengers carried.

Operating expenses of the 57 systems increased by $1,302,421 to $40,085,140, and the net operating revenue amounted to $18,183,840, an increase of $1,333,798. After all profit and loss adjustments had been made, the net surplus amounted to $1,014,016, thirty-two of the railways reporting a surplus of $2,273,456, and 25 railways a deficit of $1,259,440.

The number of miles of track operated by Canadian electric lines is 2,203. In addition to the passenger traffic, a total of 3,662,756 tons of freight was transported. The total number of employes was 18,801 whose wages amounted to $26,984,061.

The British Columbia Electric Railway is the largest system, in point of mileage, in Canada, with 303 miles of track; the Montreal Tramways is second, with 272 miles; Toronto Transportation Commission, third, with 222 miles, and the Winnipeg Electric Railway third, with 108 miles of track.

Montreal lines lead in passenger traffic, with 257,005,580 passengers carried during the year; Toronto second, with 206,822,838; British Columbia third, with 77,462,188; Winnipeg fourth, with 61,238,734 paid passengers.

These Diners Are Heated

New dining cars, embodying the latest construction features and including a concealed heating system, were received by Frisco Lines in August and were placed in service on the Meteor, fast Frisco Lines train between St. Louis and Oklahoma City. The new diners will also be operated on the Texas Special over the Frisco Lines. The cars were constructed by the Pullman Car & Mfg. Co. of Chicago.

The new cars have an overall length of 84 feet and seating capacity for 36 diners. They are of all-steel construction. The inside finish and furniture are of steel, painted and varnished in three-tone green and decorated in the new Adam design. A Wilton velvet carpet and flowered tapestry upholstering to harmonize with the color scheme of the car, complete the furnishings. Particular attention has been given the heating system of the new cars. The customary radiators are not in sight. The heat comes through brass grills in the window capping and the temperature is regulated by themostatic control. Soft light, from an indirect lighting system of 200 lamps concealed in the ceiling moulding, is another unusual feature of the car.

The Frisco's New Diner.

Suisun Bridge to be Dedicated Nov. 1

Twenty-two thousand tons of steel, fabricated into the West's most gigantic structure and flung for a distance of a mile and an eighth across Suisun Bay, 30 miles northeast of San Francisco, are in their final position. After 18 months of record construction on the entire project, the last of the great girders going into the vast super-structure of the span have been riveted in place, and on November 1 formal dedication of the bridge to public service will be made by Southern Pacific Company, its builders.

Completion of the super-structure was marked early in October when the last permanent deck span, ending its service as a floating falsework from which the remainder of the bridge was erected, was floated into position at the north end of the span, touching the shore of Solano county. The task signalized virtual finish of the $12,000,000 job that has been under way since April, 1929, when engineers first launched into the feat of sinking ten great concrete piers into the bottom of the bay as the foundation for the structure.

Erection of the bridge itself signalizes elimination of the last physical barrier in transcontinental railroad travel by making possible retirement of the historic train ferries, Solano and Contra Costa, which for many years have been a fascinating though tedious phase of such travel.

A resultant saving of from 25 to 30 minutes on passenger train schedules and from two to four hours on the handling of freight trains will be among the important features of public service effected by the bridge.

The bridge lies across Suisun bay, in the upper reaches of San Francisco bay near the confluence of the Sacramento and San Joaquin Rivers, approximately a mile east of the present train-ferrying point, and will be officially named by United States Senator Samuel M. Shortridge of California as the Martinez-Benicia bridge, thus honoring the communities at either end. The famous old "C. P. Huntington," No. 1 engine of the Central Pacific Railroad, parent organization of Southern Pacific, will lead the first train across the bridge November 1, under its own steam. Completion of the structure will be marked by a celebration at Martinez in which many northern California cities will participate.

They Don't Jump Quick Enough

Reports from the New York state bureau of motor vehicles show that more than half of the persons injured by automobiles during the first five months of this year were pedestrians.

A total of 34,042 injuries have been reported, of which 18,136 were to pedestrians and only 11,133, the report says, the result of automobile collisions. The report states that it evidently is safer to ride in New York than to walk. In the five months 914 persons were killed in motor vehicle accidents. The largest number of accidents, 2,648, the report says, occurred between 5 and 6 o'clock in the afternoon, during the homeward trend of travel; the next greatest between 7 and 8 p.m. (2,606). It was shown that Sunday was the day on which most accidents occurred, 5,762, with Saturday a close second, 5,504. Thursday had the least of any day of the week.

SERVICE IS A VITAL PART OF B-A WATER TREATMENT

THE job of the B-A service engineer is to see that the customer obtains the utmost per water treatment dollar.

He knows boilers and locomotive operation by long, thorough experience.

He is at home in the shop, in the roundhouse or riding the engine over a division.

He is a tactful adviser in all that pertains to practical water treatment and boiler efficiency.

The B-A service engineer has a serious responsibility, for service has always been a vital factor in Bird-Archer water treatment.

The manufacture, supply and service of boiler water treatment chemicals is the primary business of The Bird-Archer Company.

These activities and expert services also properly include the installation and service of mechanical devices, likewise designed to promote locomotive boiler efficiency.

B-A Briquette

The BIRD-ARCHER Company

NEW YORK • CHICAGO • ST. LOUIS

The Bird-Archer Company, Limited, Montreal

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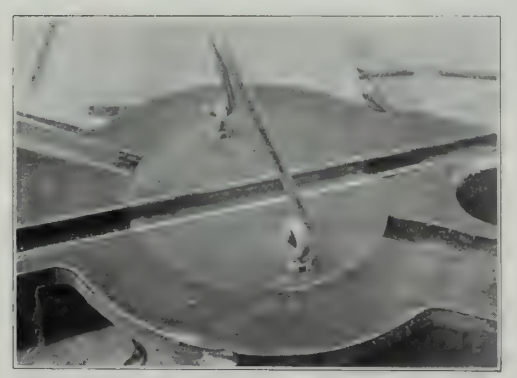
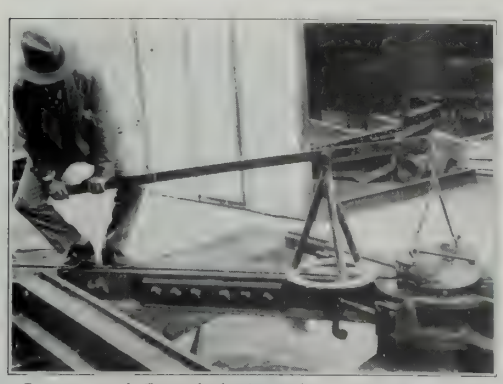
EACH DETAIL HAS BEEN
AND

The Button, or Turntable, which rotates in well to line up the flange way. They are of Chrome Vanadium Steel.



The Wishbone Lifter is shown here hooked into the eye-bolts screwed into the threaded holes in turntable.



Lever and Stand designed so one man can lift the 350-lb. button out of the well when necessary.

Continuous Crossing Installed at Junct
Tracks

SHOCKLESS

Bridges the two-inch gap in crossin
tion now prevalent; increases the life
passengers, and reduces damage claims
nuts and parts coming

Equipped With Electric Thermostatic Heat Control to P

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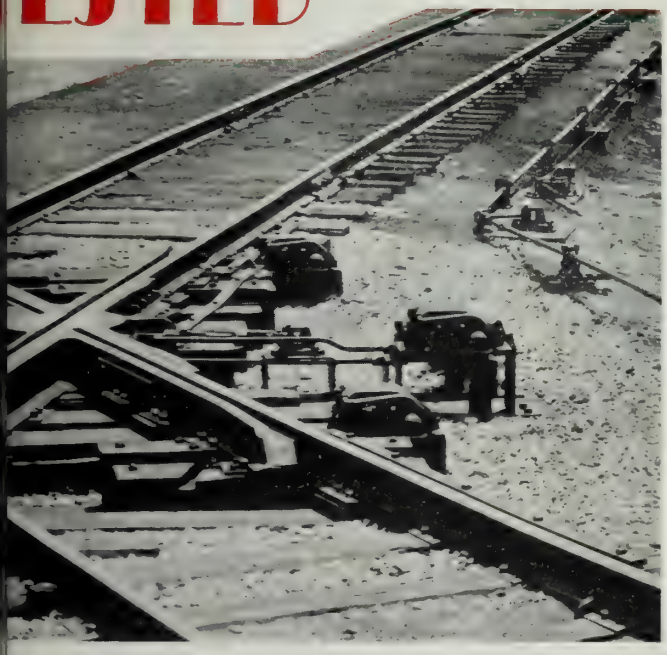
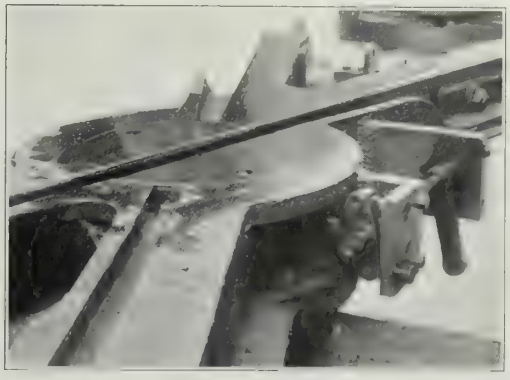
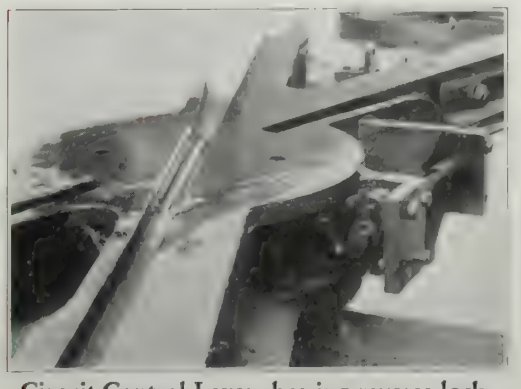


ion Pacific and Southern Pacific
Gate, Calif.

Two-Flangeway Button to be used to convert crossing into simple crossing when making any repairs.



Circuit Control Lever which gives electrical indication in the interlocking tower that the turntables are lined up and locked.



Circuit Control Lever showing reverse lock-up and indication from the one above.

NOISELESS

nates the destructive hammering-ac-
ossing; adds to the comfort of your
, and much of the expense due to
your equipment.

eezing Where Weather Conditions Make It Necessary

ils to

CROSSING CORP.
ELECTRIC BLDG.
CALIFORNIA

Doctor Church's Steam Motor Car or Bus, Built in 1833, and Run Between London and Birmingham.

My Dizziest Ride

By
Louis Edward Palffy

In these days of airplanes the general impression is that for real, hair-raising adventure one had to venture into the sky, that the era of getting something like a new and exciting kick out of automobiles has passed.

But not with me. Less than a month ago I had the most breath-taking adventure of my life with an automobile. As a matter of fact, I am wondering, even now, how I ever lived through it unscathed. At the garage where I am employed as a mechanic I was told one day that there was a mysterious rattle under one of the automobiles used regularly for demonstrations, and Mac, our salesmanager, asked me to take a look at it as soon as I had the time and find out what was the trouble.

Instead of waiting, I crawled under the car as soon as he was out of sight. Going over it carefully, or, in this instance, all over the bottom of it, I finally discovered that one of the bolts around the upper part of the drive shaft was loose. Since, on this particular car, the floor board was so placed that I could not easily reach the point of trouble from above, I was compelled to work from below. However, the loose bolt was in such a position that try as I would, I could not reach it from the ground either. Accordingly, I raised myself on the drive shaft and winding my feet around it I was able in that not-too-comfortable position to carry on my work with success.

I cannot remember how long I worked thus. At the most, it must have been less than ten minutes. I do not even recall whether I heard any voices, I was so absorbed in finishing what I had before me.

Suddenly, then, and before I knew what had happened, I noticed with terror in my heart, that someone had started the motor, was, as a matter of fact, actually backing the car out of the garage! Clinging frantically to the drive shaft and the rear or lower frame work of the car, I shouted, again and again, at the top of my voice. But the fool, as I thought of the unknown driver, persisted in racing the motor, as if trying it out, which of course drowned my voice.

After my first moments of terror, which, to me, seemed like an eternity, and noting that the automobile was heading toward the main part of town, I tried to reason out my next move. I could have dropped to the ground, of course, but under the circumstances, that might have proved fatal. If the automobile to which I was clinging did not run over me, and I was in such a position that I could not look back and see how much traffic was following, the next one, never expecting a man precipitated into his path, surely would. No, I decided, that would never do. The only alternative for me was to continue to hang on for all I was worth. Once, at what must have been one of the main intersections, the automobile slowed down, seemed about to stop, but on it went again! That must have been before one of the numerous traffic lights, I reflected.

This, in a way, gave me hope. The automobile was bound to reach a traffic light when it would have to come to a dead stop, which would have been a signal for me to lower myself and crawl from underneath it. Helplessly I looked down at the ground flowing past me, so close, and yet, at the same time, so threateningly far! Asphalt, cobblestones, street-car tracks, it all looked so different from the ground I was used to walking on that unconsciously I tightened my grip.

Then, as my feet, almost numb, were still wound around the drive shaft, I felt something hard pressing against my hip. Almost jubilantly, I carefully switched my position in such a manner that I was able to clutch in one of my hands what I felt there. A hammer! Less than a moment later I was desperately pounding it with my free arm against everything that I could reach without endangering myself. I pounded and pounded and pounded until the sweat came. But it was all in vain.

At this particular time, the driver was slowly ascending a hill. Again I wriggled into such a position that I could use the hammer. But I might as well as hammered away at the portals of—O, well. There was not the slightest indication that the driver had heard me.

Soon afterward, unexpectedly, I had to switch my position again. It seemed, much to my discomfort, as if all the blood I had was rushing to my brain. I had to use all my strength to keep from sliding into the clutch part of the automobile with my head. We were, by all appearances, now going *down*hill!

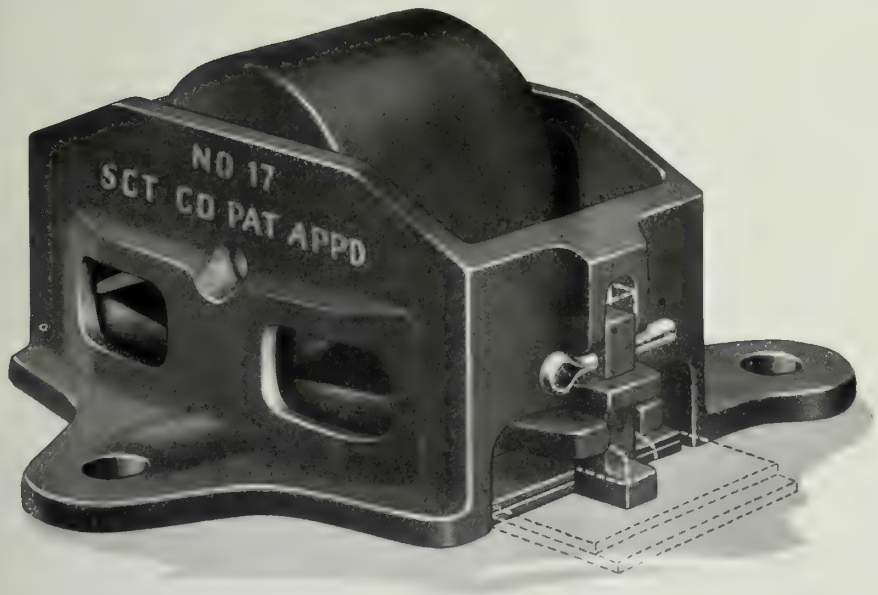
A silent prayer of thanks escaped my lips when the automobile straightened out on an even grade, and I could rest myself again, relieving the strain that had ground away at my muscles until they ached.

But then a new and frightening thought occurred to me. Where, in the name of this and that was the automobile headed? And how much longer, in particular, would it be before it would pull back into the garage and enable me to free myself from my precarious position?

Finally, after I had sunk into a

STANDARD CAR TRUCK CO.

1322 McCORMICK BLDG., CHICAGO



BARBER No. 17

ADJUSTABLE

SIDE BEARING

¼″ DOWN ⅜″ UP
WITHOUT JACKING
UP THE CAR OR
USE OF TOOLS

BARBER

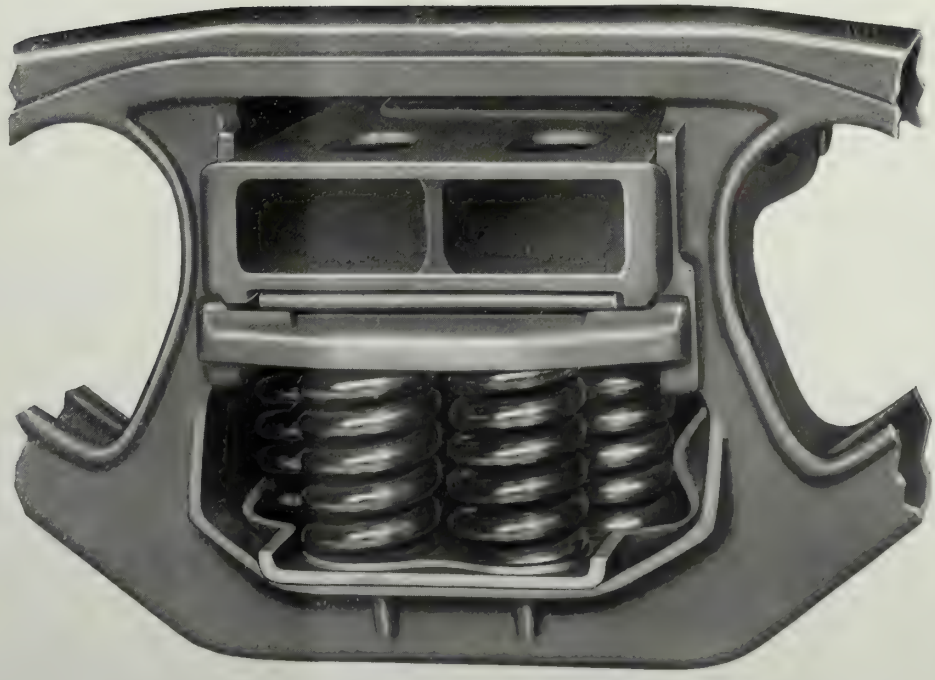
Lateral Motion

Applied to

DALMAN

ONE-LEVEL TRUCK

70-Ton Capacity



Canadian Appliance Co.
Montreal

Goodell & Hoppe
St. Paul, Minn.

Federal Railway Device Co.
New York

Fageol 26-Passenger Coach Operated by the Union Pacific Stage System Between the Coast and the East.

daze, fresh hope, in the form of a street car track running crazily beneath me, like the undulations of an endless snake, arose in my breast. No doubt we were headed back into town. This encouraged me somewhat. Collecting all the energy that hadn't been sapped out of me, I resorted to the use of the hammer once more. I pounded, and pounded, and pounded! I even lost my patience and whacked it against the bottom of the clutch case with an oath and a fury of helpless anger, which nearly threw me out of balance and beneath the wheels of the car. Frightened, then, by thinking about what could have happened, I began to tremble, gave up the idea of further hammering, and resignedly let myself rest, as much as I could on top of the drive shaft, where every bump seemed likely to burst my head.

At last, as if in answer to a prayer, the ground beneath me became familiar, and my heart rejoiced with new hope.

The automobile, thank God, was going into the garage!

"Say," I heard someone exclaim, as I struggled to extricate myself, "this car knocks like the devil going uphill! Even on a smooth road it bangs away at times as if hell itself had let loose. What d'ya mean trying to unload a junk pile like this on me?"

By that time I had managed to get on my feet, and confronting the astonished man, talking to Mac, our sales manager.

"Listen, buddy," I exploded, "the next time you take out a car, leave me behind! Furthermore, that car wasn't knocking—it was me, I, you bonehead, pounded away under there with a hammer, trying to attract your attention! And I've a good mind to take a few wallops at you."

Regulation of Buses in Georgia

Companies operating intrastate bus lines have been held by the district court for the northern district of Georgia to be carriers for hire and subject to legislative regulation by the public service commission of Georgia in an opinion upholding the constitutionality of various provisions of the "motor carriers" act of that state.

The opinion explains that the plaintiff motor corporation contended that the act was unconstitutional as to its provisions demanding a certificate of public convenience and necessity as a condition of its carrying on business, its demand for a fee therefor, its fixing and limiting schedules, and its power to revoke certificates for noncompliance with the commission's regulations.

The court, however, upheld the law on the grounds that bus companies, though perhaps not carriers in every sense of the term, were subject to regulation through the state's power to control business and the highways, which includes the power to limit or even exclude carriers from their use.

The Modern Operator's Bus Line

The extensive interstate bus operations of the Frank Martz Coach Co., Inc., are to be augmented by 16 buses delivered recently by the White Company of Cleveland. Fifteen of the new units are Model 54 "Pullmans of the Highway" and the other is a luxurious club coach designed for special charter work. Its deluxe equipment includes tapestry over-stuffed divans and armchairs, a writing desk, radio and other club car appointments. The new buses are the first of an order for 50 Model 54's and 54A's —39- and 41-passenger units respectively.

Frank Martz, usually conceded to be the largest independent bus operator in the country, has had a colorful career. Twenty-two years ago in Plymouth, Pa., as a young, newly-married bookkeeper, he gambled his $55-a-month job against the hunch that he could operate a motor vehicle over a fixed route and pick up enough paying passengers to make a profit.

He began with a touring car and was successful, but it soon became apparent that he needed greater passenger capacity. Two years later, in 1910, Martz bought a three-quarter ton White truck chassis equipped with a 12-passenger body—the first bus body ever mounted on a White chassis. It covered 220 miles a day from the start and, during the first month of operation averaged $33.10 a day in gross business.

Martz buses operate now over an average of 500,000 miles a month and passengers carried every day are numbered by the million.

Trifling actions affect a man's credit. The sound of your hammer at five in the morning or nine at night heard by a creditor makes him easy six months longer. — *Benjamin Franklin.*

Over There, Also

Aggregate receipts of the four main groups of British railroads during the first 31 weeks of 1930, decreased by $22,663,293 from receipts during the corresponding period of 1929, according to a report from the London consulate general made public by the department of commerce at Washington. This heavy loss was distributed under all three sections of traffic: Passenger traffic, a loss of $6,788,768; merchandise freight, $9,855,150; coal and coke freight, $6,019,375. Of the aggregate decline, the London Midland & Scottish system accounted for $11,183,217, or nearly 50 per cent; the London & North Eastern for $6,564,909; the Great Western for $3,820,204; and the Southern for $1,094,963. In consequence of this fall in revenue, caused by the depressed state of trade in general, the London Midland & Scottish was forced to dismiss several hundred employes from its staff of engineers, and from its car construction departments. The London North Eastern is following the same course, spreading the reductions as far as possible over the whole system.

"Justice is something that man knows little about."—*Clarence Darrow.*

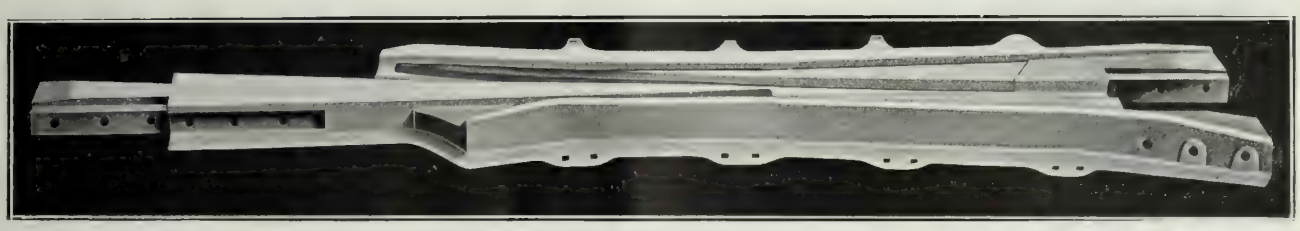
"It does not matter what word you choose if you understand what you mean by it."—*Stanley Baldwin.*

"One of the greatest, if not the most salient, defects of our day is the lack of wisdom."—*A. Lawrence Lowell.*

THE CONLEY

Solid Manganese Self Guarded

SPRING FROG



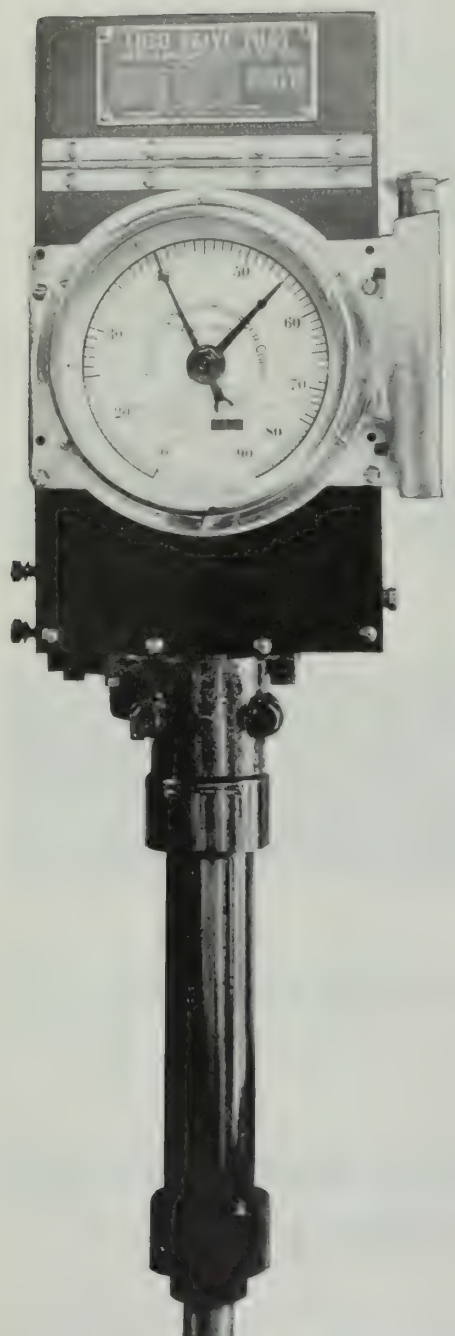
Has only 15 Component parts compared to 146 in other types of spring frogs.

They are giving excellent service under severe traffic conditions on Railroads using them.

Five years successful use on main lines have demonstrated their merit for safe and economical service.

CONLEY FROG & SWITCH CO.

Memphis, Tenn.



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IN FUEL
ACCELERATION
INCREASED

ARE BEING

LOCO VAL

EQUIPPED

YOU CANNOT AFFORD
WHAT THIS MEANS

THERE IS NO OTHER WAY
TO EFFECT THE OPERATING
ECONOMY AND EFFICIENCY
ACHIEVED BY THE

LOCO VALVE PILOT

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TONNAGE RATING

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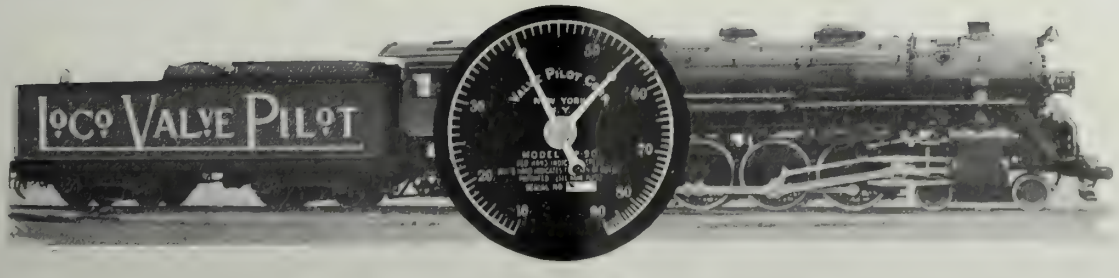
NOT TO KNOW
O YOUR ROAD



VALVE PILOT CORPORATION
230 PARK AVENUE :: :: :: NEW YORK

Loco Valve Pilot In Operation

Important Tests Over 3217 Train Miles Show Large Saving of Coal

UNDER THE headline, "The Load, the Steam, and the Schedule," this magazine published a two-page article in April describing the remarkable performance of a device known to all railroad men as the Loco Valve Pilot. The author of that article had satisfied himself that the device had been actually in service, that it was manufactured by a company of high repute, and that its advertisements were not exaggerated.

After the April issue was in the mails a letter was sent to P. W. Kiefer, chief engineer, motive power and rolling stock, for the New York Central Lines, asking him whether he would describe for the author of the April article some of the actual results obtained through the use of the pilot, a custom the writer has maintained for many years. That letter was written without consultation with anyone connected with the magazine or the manufacturers of the pilot, in pursuance of the writer's policy of knowing everything possible about materials or devices advertised in the magazine. Mr. Kiefer's reply describes important tests:

"Three years ago in November, after completion of a theoretical analysis of the various devices upon the market for indication or control of cut-off position of the main steam distributing valves, we made an experimental application of one Loco Valve Pilot to a light Mikado 2-8-2 type freight locomotive. Fuel consumption tests were made with and without the assistance of the Valve Pilot under ordinary operating conditions with regular scheduled trains and engine crews.

"As a result of nine runs without the pilot, and eight runs with the assistance of the device, there was an indicated saving of 8.2 per cent in coal per 1000 gross adjusted ton miles per train hour in favor of the pilot. Conversely on the basis of equal coal consumption with and without the use of the pilot an increase of 14.8 per cent in 1000 gross adjusted ton miles per train was effected by the use of the pilot.

"Later a more extensive test under the same conditions was conducted with a Mohawk type 4-8-2 locomotive. This class of locomotive representing the most modern type of standard main line freight power.

"Comparing 23 runs, totaling 3110 train miles without the Valve Pilot to 24 runs, totaling 3217 train miles with the assistance of the device, there was an indicated saving of coal in favor of the pilot of 15.4 per cent per 1000 gross actual ton miles per train hour (time enroute), 13.6 per cent for the same unit based upon working time and 9.1 per cent per 1000 gross actual ton miles. The actual gross tonnage of the trains ranged from 1813 to 6140, averaging approximately 3530 tons.

"Up to the present time on 2-8-2 Mikado and 4-8-2 Mohawk types of freight locomotives, 259 applications have been made, and on 4-6-4 Hudson and 4-6-2 Pacific types of passenger locomotives, seven applications are now completed. The present schedule calls for a total of 295 applications.

"The Valve Pilot does not increase the power of the locomotive but makes it possible for the engineman to reproduce at will, the maximum drawbar pull speed curve for the locomotive or maximum fuel economy as operating conditions may warrant."

The Loco Valve Pilot utilizes the definite relationship between piston speed in feet per minute and locomotive speed in miles per hour, and combines the functions of a speed indicator and recorder with those of a cut-off indicator and recorder. It consists, essentially, of a dial having two hands, one showing the locomotive speed, and indirectly the corresponding piston speed in feet per minute, the other hand showing the position of the cut-off at the locomotive cylinder valves expressed in the miles per hour for which that cut-off will produce maximum draw-bar pull. The speed hand is operated by a direct hook-up with the driver on the wheel in contact with the rail. The cut-off hand is connected mechanically to the tumbling shaft by means of a cam movement which corrects the angular displacement so that the hand-travel reflects correctly the changes in cut-off. The device provides a graphic record which shows how the locomotive actually was operated, from which the operating department can determine for every point of the run whether the locomotive was operated efficiently. This is done by comparing the tape record with a profile of the road drawn to the same scale as the tape record and showing grades, curves, and other physical characteristics.

The Safety Work Grows Steadily

In his yearly message delivered before members of the National Safety Council attending the 19th yearly Safety Congress and Exposition at Pittsburgh, Sept. 29, President C. E. Pettibone of Boston said:

"Reductions in accidents will never come like avalanches. Good safety records usually are won after battling with the problem for years. People must be convinced that accidents have definite causes, that they don't just happen. Employers, public authorities and others having influence must have the will and desire to apply themselves seriously to the stopping of accidents.

"We are encouraged, therefore, by the indisputable evidence secured here and there that accidents can be practically stopped. We have the good records of thousands of industries, the 60 per cent reduction on the steam railroads, the 11 per cent reduction in child accidents last year. There is no community that has made an effort for safety which has not made some outstanding record of safety achievement. The safety movement has reached that stage where it cannot possibly stop growing. But the growth is like that of a tree. The yearly accretions may not be noticeable, but the roots are ever sinking deeper and the branches are ever spreading wider and reaching higher into the sky.

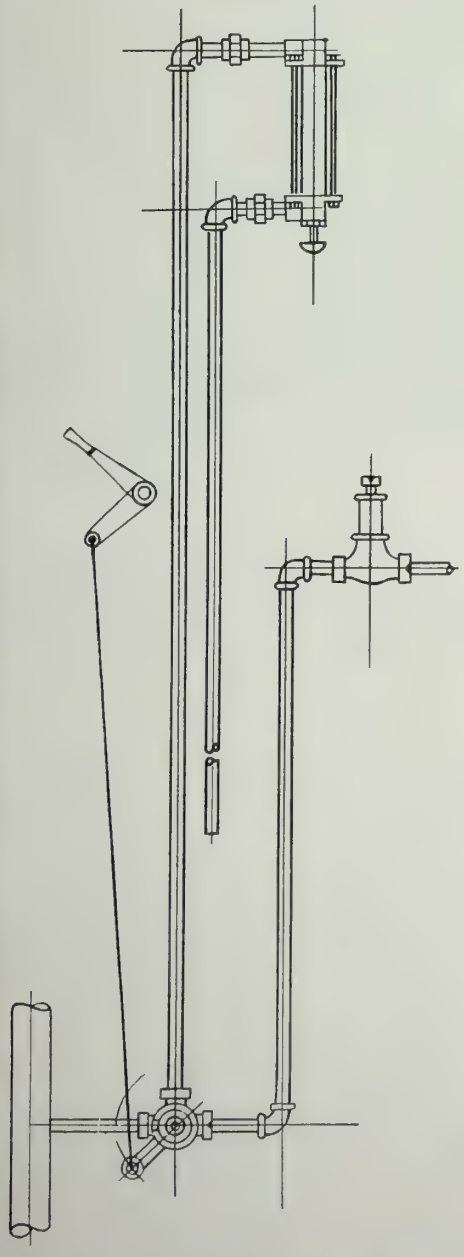
"It is vital that we ask ourselves, 'Where are we going and how far can we go in this accident problem?' The death rate per 100,000 population in 1929 was about 79.9. There were 97,000 deaths—10,000,000 people injured! The increase did not occur in industry, or in the homes; and we know that in the school age group fatalities decreased 11 per cent last year. We all know that the cause of our greatest concern in the accident problem is the motor vehicle. Thirty-one thousand deaths caused by this single type of instrument cannot be accepted as a necessary part of our routine existence.

"If the motor vehicle accident problem is primarily one of organization, then surely 'other public' accidents, including those in the home, which all together are stealing 43,000 additional lives every year, demand the same treatment. Again this is an educational problem demanding strong leadership."

"Knowledge comes from the outside; understanding comes from within."—*Count Keyserling.*

THE ECONOMY
TENDER WATER LEVEL INDICATOR

REMOVES THE RISK—



of running short of water and the consequent inevitable delays or serious damage—

of crawling out on a tender to measure the water supply on a speeding train—sometimes on a dark, cold, stormy night.

This device shows *in the cab* the amount of water in the tender.

It is simple, positive in action, easy to apply, and cannot get out of order.

Locomotive engineers and firemen will find the Economy is easy to operate and is the *only positive indicator* on the market to stand up in continuous service without requiring maintenance. It is used by both Canadian and American railroads.

RELIANCE RAILWAY APPLIANCE COMPANY LIMITED

712-714 RAILWAY EXCHANGE BUILDING - MONTREAL, CANADA

—Pacific & Atlantic Photo.

The Famous Skyline of New York Is Well Known, But the Changes Are So Interesting That This Latest View, Taken From Governor's Island Last Month, Should Prove Welcome.

Coast to Coast Air Mail 24 Hours

PLANS FOR an all-air mail, passenger and express service from Los Angeles to New York in twenty-four hours' flying time were announced by officials of Western Air Express and Transcontinental Air Transport, following news of the awarding of the new cross-country airmail contract to the two companies.

The service will go into effect October 15, using the Western Air Express line to Kansas City and a new daylight service from Kansas City to New York.

An operating company will be created to carry out the joint contract, which company will include the Pittsburgh Aviation Industries Corpn. holding a substantial minority interest, while the two parent companies will hold equal interests.

The Western Air Express daily thirteen-hour service between Los Angeles and Kansas City will be augmented by a similar service between Kansas City and New York, thus making the transcontinental trip possible in two daylight flights with an overnight hotel stop at either Kansas City or St. Louis.

The new air mail service will include New York, Philadelphia, Pittsburgh, Columbus, Indianapolis, St. Louis, Kansas City, Amarillo, Tex.; Tulsa, Okla.; Albuquerque and Los Angeles.

The bid which won the contract for Western Air Express and T. A. T. was 97½ per cent of the maximum rate. United Avigation Corpn. of Pittsburgh made a bid of 64 per cent, but could not qualify under the requirements which demanded certain equipment and specific experience in night flying.

Santa Fe Orders Rail for 370 Miles

Speaking to New York newspaper men October 6, W. B. Storey, president of the Santa Fe System, was quoted as saying:

"Outlook for the remainder of the year is too uncertain to make any estimate of earnings. We are cutting expenses sharply to meet the decline in revenues.

"On September 1, the Santa Fe had $28,000,000 in cash and $18,000,000 in securities, it having been necessary to dip into reserves, because of lower earnings, to meet capital outlays.

"To meet the decline in passenger receipts, we reduced train miles during August at the rate of about a million dollars a year."

Smaller Traffic Volume is Expected

Shippers of the country, through estimates just submitted to the shippers' regional advisory boards expect that carload shipments of the 29 principal commodities in the fourth quarter of 1930, October, November and December, will be approximately 7,655,792 cars, a reduction of 600,120, or 7.3 per cent below the corresponding period in 1929.

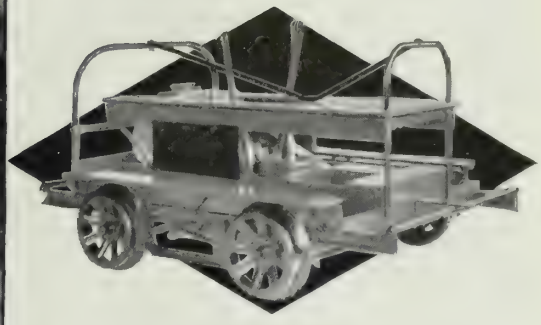
These estimates are supplied quarterly to the shippers' regional advisory boards, which cover the entire United States, and are based on the best information as to the outlook obtainable at the present time by the commodity committees of the various boards. The shippers' regional advisory boards have a membership of more than 16,000 persons representing every section of the United States and virtually every industry, including agriculture, to be found in this country.

New Date for Traveling Engineers

The Traveling Engineers' Association will have its next yearly meeting at the Hotel Sherman, Chicago, March 25-28, just prior to the convention of the International Railway Fuel Association, March 30 to April 1. An effort will be made to have several other associations meet at about the same time, as a matter of economy and efficiency. The change of meeting dates was decided upon just before the engineers' convention adjourned.

CO-OPERATION

The outstanding work done during the Mississippi floods and Florida disasters illustrates the degree of co-operation that railroads are ever ready to extend —not only to the public, but to each other — in routine of daily service.



THE FAIRMONT S2
Standard Section Car—Two Types —Wood or Steel Frame

The spirit of unselfish service motivating the Railroad World was the inspiration that brought world-wide leadership to the Fairmont organization.

This is seen in the Fairmont objective — to sell not equipment, but *lowest over-all cost* of service. The fact that over half the motor cars now in use are Fairmont products is undeniable evidence that this objective has been consistently attained and the Railroad World appreciates the spirit behind it.

When you transact business with Fairmont, you deal with specialists who are ready with a *lowest cost* solution to every problem of motor cars on maintenance work. Representatives everywhere to serve you.

FAIRMONT RAILWAY MOTORS, INC.
FAIRMONT, MINNESOTA, U. S. A.

General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO
District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans
FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines push cars and trailers, roller axle bearings, wheels, axles and safety appliances

Fairmont Mudge — Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT

Station Case to Supreme Court

Railroads concerned, the Santa Fe, the Southern Pacific, and the Los Angeles & Salt Lake, (Union Pacific) have appealed to the United States Supreme Court asking reversal of the decision of the California state supreme court upholding the recent order of the state railroad commission directing the railroads to build a union station in Los Angeles on what is called the Plaza site. The roads contend, as they have done consistently for a long time, that neither the railroad board nor the state supreme court has authority to order the construction of the station.

Revenue Loadings Still Lower

Loading of revenue freight for the week ended September 27 totaled 950,381 cars, the car service division of the American Railway Association reported Oct. 8. This was a decrease of 2,131 cars below the preceding week this year and a reduction of 252,758 cars below the same week last year. It also was a decrease of 246,584 cars compared with the corresponding week in 1928.

Miscellaneous freight loading for the week of September 27 totaled 382,165 cars, 107,370 cars under the same week in 1929 and 98,346 cars under the corresponding week in 1928.

Loading of merchandise less than carload lot freight amounted to 244,733 cars, a decrease of 28,761 cars below the corresponding week last year and 25,835 cars below the same week two years ago.

Railroads Spending Millions

Capital expenditures by the Class I roads in the first six months of 1930 for new equipment and additions and betterments to railway property totaled $468,305,000, according to a report submitted at a meeting at Atlantic City Sept. 24 of the advisory committee of the Association of Railway Executives. The report was presented by R. H. Aishton, chairman of the executive committee of that association.

Capital expenditures made during the first half of 1930 were an increase of $118,000,000 over those for the same period in 1929. The increase over last year took place despite the fact that traffic thus far in 1930 has been less than in any corresponding period since 1924. Railway earnings have been greatly reduced, the rate of return for Class I roads for the first six months this year having been only 3.61 per cent on their property investment compared with 5.52 per cent last year.

Class I railroads in the first six months this year expended $187,486,000 for new equipment while $280,819,000 were expended for roadway and structures.

Columbus Haile

Columbus Haile Resigns

The resignation of Columbus Haile as president of the Missouri-Kansas-Texas Lines was announced October 8. Mr. Haile, who has passed the age of 70 years, will remain a director with the title of president retired. He will be succeeded by M. H. Cahill, who will assume the duties of president in addition to retaining the positions of chairman of the board and chairman of the executive committee.

H. E. McGee, executive vice president, has succeeded C. E. Schaff, who had resigned as a director. The Interstate Commerce Commission has authorized R. S. Reynolds, president of Selected Industries, to serve as a director.

Mr. Haile was elected president of the Katy in 1920 on the retirement of Mr. Schaff from that position. He had been vice president and traffic manager for 19 years previously. He was born in Dallas county, Alabama, and he began his railway career at the age of 20 as a clerk with the Houston & Texas Central. He went to the Katy as assistant general freight agent in 1889 after serving with the International-Great Northern and the Texas Traffic Association. He was a member of the board of administration of the association.

Mr. Cahill joined the Baltimore & Ohio as a messenger boy in 1891, working up through operating grades on that line. For a short period he superintended the Buffalo division of the Delaware, Lackawanna & Western. He left the B. & O. in 1920 to become general manager of the Seaboard Air Line. He was operating vice president of that line when he went to the Katy as chairman two years ago.

—Blank & Stoller.

M. H. Cahill

A Short Line Complains

The Indian Valley Railroad has instituted an attack on the Interstate Commerce Commission's order authorizing the Western Pacific Railroad to build a connecting link with the Great Northern. The plaintiff road has filed a suit in federal court against the commission and the United States.

The petition asked the commission's order of June 8 be set aside.

The petition said the Indian Valley line in 1916 constructed a standard-gauge railway from Paxton to Englemine in Plumas county, and through the heart of a rich timber region. A standard instead of a narrow gauge was constructed at the request of the Western Pacific, it was declared, and the petitioner underwent "financial hardships" to maintain the line.

Last year the Western Pacific proposed its new line from Keddie, which is near Paxton terminal of the Indian Valley, to Lookout, the Great Northern terminal, the petition says, going through the heart of the territory served by the Indian Valley. The Interstate Commerce Commission after hearings authorized the link.

The petition asserted this would be "disastrous" to its business and would take virtually all the timber business from the Indian Valley, forcing it to depend on decreasing ore shipments from Englemine, compelling it to abandon $477,618 in road and terminal properties, and make the investment of Indian Valley stockholders valueless.

The suit charged the commission disregarded testimony to this effect by O. H. Bru, Indian Valley treasurer, and that the commission failed to protect or compensate the petitioner.

The petition called the commission order "unjustified, inequitable, unreasonable and unjust," in excess of its author-

4000 LOCOMOTIVE BOOSTERS

In All Branches of
RAILROAD SERVICE

FROM ATLANTICS IN LOCAL SERVICE...
TO MOUNTAIN TYPES IN TRANSCONTINENTAL SERVICE—

DURING the last few years, railroads have continued to ask more of their locomotives than ever before.

Nothing has been of more assistance in fitting existing power to answer this demand than The Locomotive Booster.

Nine years ago the first Booster was applied to an Atlantic type locomotive. Today many of these engines are still operating due mainly to the added power the Booster provides.

Since the original application, over 4,000 of these units of reserve power have been applied for use in every branch of railroad service. From Atlantics in local service to Mountain Types in transcontinental service, the Booster is providing substantial increase in power.

Most new power is Booster-equipped. To meet with economy today's demands for greater power, all existing power should incorporate this principle.

Boosters Increase Power

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

ity and confiscatory under the Constitution.

Locomotives

The reports of carriers filed with the American Railway Association show that Class 1 railroads of this country on September 15 had 4,932 locomotives in need of classified repairs or 8.9 per cent of the number on line. This was an increase of 347 or 8.2 per cent above the number reported in need of such repairs on September 1. Serviceable locomotives in storage on September 15 numbered 7,961 as against 8,264 on September 1. During the first eight months of this year 561 new locomotives were placed in service as against 474 during the same period last year. New locomotives on order September 1, totaled 235 compared with 395 on the same day last year. Locomotives leased and otherwise acquired not included in the foregoing figures.

Inquiries for equipment since our September issue have been made by the Central of Brazil for ten 2-10-4 type locomotives; Maine Central for two 4-wheeled switching engines; Santa Maria Valley for one 2-8-2 type locomotive.

Orders for locomotives have recently been reported as having been placed with the Bethlehem Steel Co. for six auxiliary locomotives by the Lehigh & New England; with the General Electric for ten 3500 h.p. electric locomotives by the Lehigh & New England. It is also reported that the Baltimore & Ohio will shortly purchase 50 locomotives, and that the Norfolk & Western will build ten Mallet locomotives in its own shops.

According to reports Baldwin Locomotive Works show shipments for September amounting to $2,980,000 as against $2,560,000 for the same month last year; for the nine months period of 1930 the total is $26,150,000 as against $17,370,000 for the same period of 1929. Unfilled orders on hand as of October 1, 1930, totaled $8,803,000 against $11,200,000 on Sept. 1, 1929. Orders booked in September amounted to $580,000, making a total for the current year to date of $12,000,000. The schedule for October, 1930, called for the shipment of just under $3,000,000, or about the same rate as in September. November shipments should be nearly as large, with the possibility of a tapering off in activities in December. Recent orders placed with this builder are: Lehigh & New England, two 2-10-0 type locomotives.

Passenger Cars

Recent equipment orders reported are: Erie Railroad, two mail-baggage cars from Bethlehem Steel Co., and Chicago, Burlington & Quincy, ten baggage cars, 70 feet long, to be constructed in own shops.

Freight Cars

Reports of carriers to the American Railway Association show that Class 1 railroads in the first eight months of this year placed in service 64,418 new freight cars as compared with 51,680 for the same period last year.

Of the new freight cars installed 33,135 were box cars, an increase of 8,409 cars over the first eight months of last year. There also were 24,380 new coal cars placed in service during the eight months period of this year as against 18,136 installed during the same period of 1929. In addition, the railroads during the same period of this year installed 3,225 flat cars, 2,650 refrigerator cars, 727 stock cars and 301 other miscellaneous cars.

On September 1 of this year the railroads had 12,166 new freight cars on order as against 31,898 on order the same day last year, and 9,257 on the same day two years ago.

On September 15, Class 1 railroads had 159,020 freight cars in need of repairs or 7.1 per cent of the number on line. This was an increase of 5,974 cars above the number in need of repair on September 1, when there were 153,046 or 6.8 per cent.

Freight cars in need of heavy repairs on September 15 totaled 109,821 or 4.9 per cent, an increase of 3,121 compared to September 1, while freight cars in need of light repairs totaled 49,199 or 2.2 per cent, an increase of 2,853 compared with September 1.

On September 23 Class 1 railroads had 389,687 surplus freight cars in good repair and immediately available for service. This was a decrease of 2,132 cars compared with September 15, when there were 391,819 surplus freight cars.

On September 23 surplus coal cars totaled 133,822, an increase of 2,986 within approximately a week, while surplus box cars totaled 203,408, a decrease of 6,437 cars for the same period.

Reports also showed 22,218 surplus stock cars, an increase of 14 above the number reported on September 15, and surplus refrigerator cars totaled 12,717, an increase of 459 for the same period.

Since the September issue the following inquiries have been made for freight cars: Amtorg Trading Co., ten air dump cars of 70-ton capacity; Maine Central, five gondolas of 70-ton capacity; National Tube Co., ten standard gauge trucks, 70-ton capacity; Pennsylvania Salt Co., three to five tank cars for acid; and Swift & Co., 200 steel underframes for refrigerator cars.

Recent orders include: Chicago & Great Western, 500 fifty-ton steel box cars from Pullman Car & Mfg. Co.; Illinois Steel Co., ten roll transfer cars from Lorain Steel Co.; and the Tennessee Copper & Chemical Co. has leased 50 tank cars from the General Tank Car Co.

Bulletins and Devices

An attractive, illustrated bulletin comes from the Camden Forge Co. of Camden, N. J., describing the company's equalizers, draw bars, and other forgings. Special attention is given to wrought iron, carbon steels and alloy steels of all analyses. The bulletin may be had by addressing the company at Camden.

Hayes Type W Post

An illustrated booklet of 16 pages comes from the Hayes Track Appliance Co. of Richmond, Ind. It is a little volume every railroad man intrusted with the buying of bumping posts should have in his file. A convincing sentence is found on the first page: "The Hayes Type W Bumping Post is made to be hit; there are no restrictions on its use."

B-A Boiler Feed Pump

The B-A locomotive boiler feed pump has recently been developed by the Bird-Archer Company for use with locomotive water conditioner. This centrifugal pump unit consists of a steam turbine, pump and regulating device assembled into an enclosed and compact unit. There are no additional control valves, over-speed trips, or any other parts required in the operation of the pump. Regulation is by means of an ordinary globe valve in the cab. The finished pump unit presents a very simple and pleasing appearance.

The water end of the B-A boiler feed pump is a two-stage, double suction, high efficiency pump. It is assembled from the end and may be completely taken apart and put together on the locomotive in less than 30 minutes, without disturbing any pipe or hose connections. The pump was designed particularly to handle water at the boiling point, in connection with the locomotive water conditioner.

The ruggedness of the steam turbine is emphasized by the fact that it has a very large diameter steel shaft and that the turbine wheel is a one-piece steel forging. The castings are very heavy to insure accurate alignment of the bearings and the bearings themselves are of a special design adapted to the high speed at which this turbine is operated. The turbine wheel was designed to withstand speeds of 30,000 r.p.m., without failure, (although the maximum operating speed is limited to 6,000

NOW A DAY coach seat that rotates as well as reclines

HERE is a chair that will help you increase day coach travel. This luxurious seat, the 162-PSS, not only reclines to four restful positions, but *rotates* as well — and on a small, space saving radius. It enables passengers to sit in groups, to face the windows and fully enjoy the scenic advantages of your route. It will bring to your day coaches more luxury and comfort per dollar of investment than any other style built today The trim, practical design of the 162-PSS allows the arm rest to be placed flush against the side wall — actual cushion space is increased approximately two inches over present types of day coach seats. If you are contemplating the purchase of new or replacement seating for day coaches, it will prove well worth your while to investigate the new 162-PSS. Any of the offices listed below will be pleased to furnish you with complete information on the new 162-PSS or other types of Heywood-Wakefield railroad seating.

H-W rotating and reclining chair 162-PSS in C. B. & Q. R. R. day coach.

HEYWOOD-WAKEFIELD

Boston, Massachusetts

516 West 34th St., New York City
J. R. Hayward, Liberty Trust Bldg., Roanoke, Va.
H. G. Cook, Hobart Bldg., San Francisco, Calif.
311 Railway Exchange Bldg., Chicago, Ill.
A. W. Arlin, Delta Bldg., Los Angeles, Calif.
The G. F. Cotter Supply Co., Houston, Texas

The Railway and Power Engineering Corporation
133 Eastern Ave., Toronto; Montreal; Winnipeg, Canada

r.p.m.). Thousands of similar turbines in locomotive service certify to its safety.

The locomotive water conditioner, of which the B-A boiler feed pump is a part, is a new type of feed water heater on the tender and offering the advantages of hot water storage, oxygen removal and water treatment, in addition to its heating function.

MacRae's Blue Book Ready

The latest issue of MacRae's Blue Book is impressive in point of size, but this is the least important thing about it, as may be discovered easily by anyone who understands the value of the information it contains. In the present volume, among other things are an address and local distributors' section; an index to classification numbers; a finding list which is a cross reference to every individual commodity so that, no matter how termed, the item may be found at once, an exclusive feature; a classified material section, another exclusive feature of MacRae's; Canadian sections; trade facilities section, and trade name section. Indeed you can find anything in this book except pee wee golf, and maybe this also is included. It is a book every business firm needs if it wishes to keep its employes at work instead of racing around town hunting things. MacRae's Blue Book may be obtained from the company at two addresses, 18 East Huron street, Chicago, and 51 Madison avenue, New York.

The Static Machine

Good printing and particularly unusual illustrations draw attention to a handsome catalog just issued by the Waugh Equipment Co. of New York, Chicago and Depew, N. Y. The title "The Static Machine," emphasizes the "million pound machine" which is an interesting and valuable part of the Waugh-Gould laboratories. This huge mechanism has an over-all height of 37 feet, of which 26 feet stands above the floor level, while 11 feet is built in below on a concrete base. The machine is hydraulically operated, and is capable of exerting a pressure of one million pounds. It is used to test the comparative static capacity and creepage of draft gears. It is also adapted to all forms of tension, compression and transverse testing. The complete description of the machine, its operation and the accurate instruments provided for indicating the load and travel throughout the tests, is found in the bulletin which may be obtained by writing the company at any of the offices named.

Railway Construction

Tracks & Yards

ARKANSAS.—The Ozark & Philpott Valley has permission to build a line from Ozark, northerly and easterly in Franklin county, about seven miles.

MISSOURI.—The Kansas City Terminal has asked permission to build 4,500 feet of line to complete a belt around the city to provide alternative routes between the east and west sections of Kansas City.

MONTANA.—The Montana Power Co. has let a contract to the S. Burch & Son Construction Co., Great Falls, Mont., for a seven and one-half mile spur from the line of the Northern Pacific at a point between Pablo and Polson, to the site of its $10,000,000 power plant on the Flathead River.

NEVADA.—The Los Angeles & Salt Lake has let a contract to the Merritt-Chapman & Scott Corpn., San Pedro, Calif., for a branch line from a point on the main line between Bracken and Pierce to a connection with the proposed government railroad at the site of the Boulder Dam, about 22 miles.

PENNSYLVANIA. — The Pittsburgh & Lake Erie has let a contract to the Ferguson & Edmondson Co., Pittsburgh, for a branch line from Monaca to Bellowsville, about three miles.

SOUTH CAROLINA.—The Carolina, Clinchfield & Ohio and the Charleston & Western Carolina have asked permission to build a line of about two miles, including a 750-foot tunnel at Spartanburg, to connect the rails of the two companies.

TENNESSEE.—The Oneida & Western has let a contract to Cook & Elliot, Oneida, Tenn., for an extension from its present terminus at East Jamestown, about nine miles, to cost about $95,000.

Buildings & Structures

CALIFORNIA. — Los Angeles. The Santa Fe has let a contract to Robert E. McKee, Los Angeles, for grade separation structures at the intersections of its tracks, and Avenues Nineteen, Twenty and Twenty-six. A contract for a nurses' residence has been let to the Lynch Construction Co. by the Santa Fe Hospital Association.

ILLINOIS.—Chicago. The Chicago & North Western has let a contract to Anderson & Co., Chicago, for an express terminal near the Madison street station.

—Chicago. The Santa Fe has let a contract to the Roberts & Schaefer Co. for an "N. & W." type electric engine coaler with 70-ton track hopper, coal storage below rails, at the Eighteenth street yard.

IOWA.—Fort Madison. The Santa Fe has let a contract to George Senne, Topeka, for a two-story office building.

MASSACHUSETTS. — Boston. The Boston & Maine has let a contract to Stuart & Sons Co., Watertown, Mass., for the substructure of four two-track, single leaf, rolling lift bridges over the Charles River. A contract for the superstructure has been let to the Phoenix Bridge Co., Phoenixville, Pa. The electrical equipment is to be installed by the Norwood-Norwood Co., Chicago. The amount of the contracts will be about $1,000,000.

MEXICO.—Mexico, D. F. The National of Mexico is planning to build a union station here to cost about $5,000,000. The Colonia, the Buenavista, the San Lazaro and the Peralvillo stations will be abolished. The site of the station has not been selected.

MICHIGAN.—Grand Rapids. The Pere Marquette has let a contract to the Roberts & Schaefer Co. for locomotive coal handling equipment to be installed here.

MISSOURI.—Kansas City. The Kansas City Terminal has let a contract to the J. W. McMurry Contracting Co., Kansas City, for a grade separation structure at Oak street.

—St. Joseph. The Burlington has let a contract to the Roberts & Schaefer Co. for a multiple track "N.&W." type electric cinder plant.

NEW MEXICO.—Grants. The Santa Fe has let a contract to Fairbanks, Morse & Co., Chicago for a 310-ton coaling station here.

PENNSYLVANIA. — Munhall. The Union R.R., Pittsburgh, an affiliated line of the United States Steel Corpn. has let a contract to the Roberts & Schaefer Co., for a 200-ton locomotive coaling plant, sand drying and storage plant, and "N.&W." type electric cinder plant here.

—Rankin. The same company has let another contract to the Roberts & Schaefer Co. for a coaling plant, sand plant, and "N.&W." type cinder plant.

THE EVERTITE RAIL JOINT

is a development, not merely a new invention and provides the nearest approach to continuous rail.

It is now in use on leading railroads.

If you want better track, longer life rail and lower maintenance costs find out about the

EVERTITE RAIL JOINT.

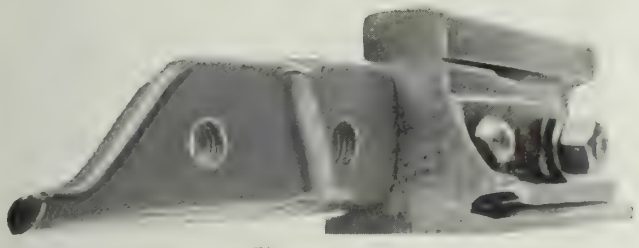


Fig. 1

This view shows one bar cut in center and the opposite bar in full length indicating the solid central portion.

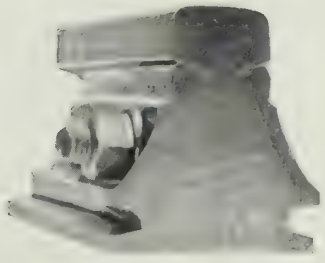


Fig. 2

Section through center showing solid rigid pillow-block formation at center of bars.

Fig. 3

Section through rail looking at end of bars toward center of joint. Note clearance between rail web and bars.

Constant Spring Tension Keeps Bolts Tight

Evertite bars are drop forged producing a live joint, the rail ends are bridged together

STANDARD EQUIPMENTS, INC.

415 Lexington Ave., New York City

Progress demands superior construction

VIRGINIA. — Petersburg. The Seaboard Air Line has let a contract to Cornell-Young Co., Macon, Ga. for the substructure of a bridge over the Appomattox River to replace the present wood and steel bridge. The superstructure will be built by the American Bridge Co.

—Clifton Forge. The Chesapeake & Ohio has received bids for locomotive shop improvements here to cost about $153,460.

WASHINGTON.—Seattle. The war department has approved the plan of the Northern Pacific for a bridge across the Duwamish River here. The bridge will cost $327,000 and will form a part of the railway's rearrangement of tracks in the industrial district where work has been under way for several months.

WEST VIRGINIA. — White Sulphur. The Chesapeake & Ohio has received bids for enlarging the White Sulphur tunnel to cost about $118,500.

Changes in Personnel

Executive & Operating

Henry Shearer, assistant vice president and general manager of the Michigan Central, has been appointed vice president and general manager of the New York Central with jurisdiction over the Michigan Central with headquarters in Detroit, succeeding **E. D. Bronner,** deceased. **J. L. McKee,** general superintendent of the Michigan Central at Detroit has been appointed assistant general manager with the same headquarters. Other changes are: **H. L. Margetts,** superintendent of the west division with headquarters at Chicago has been appointed general superintendent at Detroit; **E. E. Wright,** superintendent of the Canada division with headquarters at St. Thomas, Ont. succeeds Mr. Margetts; **J. E. Schwender,** chief clerk to the general manager at Detroit succeeds Mr. Wright.

The Interstate Commerce Commission has authorized **O. P. Van Sweringen,** Cleveland, to act as a director of the Trans-Mississippi Terminal Co., an affiliate of the Missouri Pacific Corpn. Other associates of Mr. Van Sweringen were permitted to occupy similar positions.

Lewis Neilson, vice president in charge of the secretarial department of the Pennsylvania, a veteran officer of the system, has retired after 49 years of active railroad work. During his term of office as secretary, Mr. Neilson was secretary of 112 other companies, all subsidiaries or affiliated lines of the Pennsylvania.

There has been a general reorganization of divisions on the New Haven Lines with the following changes in personnel: **C. A. Mitchell,** superintendent of the Hartford division has been assigned to the Boston division; **J. J. Snavely,** superintendent of the Midland division has been transferred to the Hartford division; **R. O'Hanley,** superintendent of the Waterbury division has been transferred to the Midland division; **S. F. Mackay,** superintendent of the Old Colony division has been transferred to the Providence division. The Waterbury and Old Colony divisions have been abolished; the territory of the former will be included in the Hartford division and that of the latter will be divided between the Midland and Boston divisions.

J. A. Rogers, superintendent of the Prince Albert division of the Canadian National at Prince Albert, Sask. has been transferred to the Capreol division with headquarters at Capreol, Ont. succeeding **M. B. Murphy** transferred to the Prince Albert division. **J. Clark,** assistant superintendent on the Calgary division at Hanna, Alta., has been transferred to the Edson division with headquarters at Edson, Alta., replacing **W. Smith,** transferred to the Calgary division.

The Boston & Maine announces the appointment of **A. W. Perkins** as superintendent of the southern division, with headquarters at Concord, N. H., succeeding **F. H. Flynn,** assigned to other duties. **G. W. Blake,** senior trainmaster at Greenfield, Mass. has been appointed assistant superintendent of the Fitchburg division.

D. J. Deasy, assistant chief operating officer of the Chicago & Alton, with headquarters at Chicago, has been appointed superintendent of the western division with headquarters at Bloomington, Ill., succeeding **J. L. Marquette,** resigned.

John R. Nutt, Cleveland, has been authorized by the Interstate Commerce Commission to become a director on the Cleveland & Youngstown Railroad.

E. W. Fowler, assistant general superintendent of the Chicago Great Western with headquarters at Oelwein, Iowa, has been appointed superintendent of the Iowa division with headquarters at Des Moines, succeeding **C. J. Foster,** appointed assistant superintendent of the Iowa division.

The Nickel Plate Road announces that territory west of the easterly yard limit at Hobart, Ind. will be established as the Chicago Terminal under the jurisdiction of **A. D. Peters,** superintendent with headquarters at Stony Island. The jurisdiction of **O. Pierce,** superintendent at Fort Wayne, will be extended to include that part of the Chicago division east of the easterly yard limit at Hobart.

Paul H. Van Hoven, wage schedule supervisor of the Duluth, Missabe & Northern has been appointed assistant to the president, with headquarters at Duluth.

The jurisdiction of **D. S. Alonso,** superintendent of the Mexico City terminals of the National of Mexico has been extended to include the Hidalgo division, with headquarters as before at Mexico, D. F. The jurisdiction of **J. I. Garcia,** superintendent of the Vera Cruz al Itsmo division with headquarters at Tierra Blanca, Ver. has been extended to include the Tehauntepec and Pan-American divisions with headquarters at Matias Romero, Oax.

L. A. Gregory, acting superintendent of the De Quincy division of the Missouri Pacific Lines, has been appointed superintendent of the division with headquarters at De Quincy, Ill.

The Great Northern has opened executive offices in Minneapolis. **George R. Martin,** vice president in the executive department at St. Paul, has been transferred to Minneapolis.

Financial & Legal

R. B. Ferguson, general auditor of the Lackawanna with headquarters at New York, has been appointed controller succeeding **G. E. Hustis,** retired. Mr. Hustis has completed 54 years of continuous service, the last 25 of which were spent with the Lackawanna. **R. C. Collins,** auditor of disbursements, and **P. D. Jonas,** statistician, have been appointed assistant controllers; **Frank Wildey,** assistant auditor of disbursements, has been appointed auditor of disbursements. The offices of general auditor, statistician and assistant auditor of disbursements have been abolished.

The Boston & Maine announces that **Allan P. Mackinnon** has been appointed general counsel. The law department has been reorganized and **W. A. Cole,** solicitor, has been appointed general attorney; **George E. Kimball, John B. Sawyer** and **Richard W. Hall,** assistant solicitors, have been appointed attorneys; **Paul O. Klinger,** tax accountant, has been appointed tax commissioner; **David S. Dow** and **John A. Barnes** have been appointed assistant attorneys.

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MEANS

THAT EVERY PIECE OF MATERIAL WAS CAREFULLY SELECTED AND TESTED . . . THAT ONLY THE HIGHEST GRADE OF SKILLED WORKMEN, UNDER EXPERT SUPERVISION AND INSPECTION WERE EMPLOYED ON THE JOB.

RALSTON STEEL CAR COMPANY
COLUMBUS, OHIO

BUILDERS OF FREIGHT CARS SINCE 1905

ANNUAL CAPACITY 12,000 CARS

quarters at Hoboken, has been appointed electrical engineer.

W. S. Wilson, division engineer of the former Alleghany division of the Pennsylvania at Oil City, Pa., has been transferred to the Monongahela division at Uniontown, Pa., succeeding **L. B. Young,** transferred.

The headquarters of **J. B. McClain,** engineer of bridges of the Seaboard Air Line, has been moved from Savannah, Ga., to Norfolk, Va.

Obituary

Walter E. Adams, special assistant to the vice president of the Boston & Albany, died at Boston, September 21, aged 68.

J. Will Johnson, vice president of the Pyle National Co., Chicago, died at Elgin, Ill., October 2, of injuries received in an automobile accident. Mr. Johnson was 61 years of age.

G. W. Mulks, formerly controller for the Southern Pacific, died at Berkeley, Calif., October 9, aged 66.

E. D. Cahill, general solicitor of the Toronto, Hamilton & Buffalo, died at his home in Hamilton, Ont., September 11.

Elmer Richards, retired division superintendent and superintendent of telegraph of the St. Louis-Southwestern, and general manager of the Louisiana & Arkansas, died at Mt. Pleasant, Tex., September 6, aged 70.

W. W. Young, master mechanic on the Texas & Louisiana lines of the Southern Pacific at Houston, died in that city, September 5, aged 61.

M. A. Hall, superintendent of machinery of the Kansas City Southern at Pittsburg, Kan., was killed September 7, at Merwin, Mo., while supervising wrecking operations at a passenger train derailment. Mr. Hall was 56 years of age.

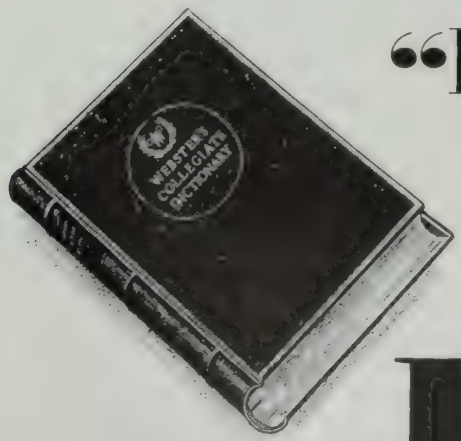
L. L. Hyde, retired general freight agent of the Lake Erie and western district of the Nickel Plate, with headquarters at Indianapolis, died at his home in Chicago, September 15.

Victor B. Hjortsberg, auditor of the Utah Railway with headquarters at Salt Lake City, died unexpectedly in that city, September 10, aged 47.

Supply Trade Notes

The A. M. Byers Company, Pittsburgh, has appointed **M. J. Czarniecki** manager of tubular sales, a newly created position. Mr. Czarniecki joined the sales organization of that company in 1913. He was assigned to the New York office the following year, where he remained until his transfer to Chicago in 1915. After the war in 1918 he returned to Chicago as district manager. In 1925 he was appointed assistant general manager of sales with headquarters in Pittsburgh.

W. J. Walsh, formerly vice president of the **Galena Signal Oil Co.,** Chicago, has been elected vice president and general manager of the **Continuous Rail Crossing Corpn.** with headquarters at the Railway Exchange, Chicago. Mr. Walsh entered railway service in 1886 as an apprentice in the shops of the Big Four at Cleveland. Three years later he was made a machinist on the Cincinnati, New Orleans & Texas Pacific and subsequently locomotive engineman, general foreman, and mechanical instructor on the first air brake car. In 1891 he was appointed division master mechanic. He joined the Galena Signal Oil Co. at Chicago in 1896 as lubrication engineer. He was appointed manager of the Chicago district in 1910, and was elected vice president in 1920. He resigned in 1928. Since then he has been acting in an advisory capacity on problems of lubrication for various railroads and industries.



"Dependability"

IS NOT DEFINED IN WEBSTER'S.

IT MEANS---

ECONOMY ARCHES

A BAFFLE WALL THAT IS ALL THAT THE NAME IMPLIES

Economy Arch Company

Railway Exchange Bldg. St. Louis, Mo.

Charles R. Jones has been appointed assistant northeastern transportation manager of the **Westinghouse Electric & Manufacturing Co.,** with headquarters as before at New York.

The Okonite Company and the **Okonite-Callender Cable Co., Inc.,** manufacturers of insulated wires and cables for electrical power, signal and control circuits, announce the appointment of **W. R. Van Steenburgh** as manager of the light and power department of the New York office territory. He will direct sales and engineering activities in New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia, Virginia and the District of Columbia. Mr. Van Steenburgh has represented the Okonite companies in a sales capacity since 1917. Because of his long experience in the railroad field his early work was confined to that department, and later he extended his activities to include the power industry. In 1925, when the Okonite-Callender Cable Co., Inc., began the manufacture of impregnated paper insulated power cables, Mr. Van Steenburgh began to specialize in the light and power field. Prior to his association with the Okonite Company he was chief clerk in the purchasing department of the Lehigh Valley Railroad.

W. R. Van Steenburgh

Frank Parker, vice president and general manager of **Briggs & Turivas,** Blue Island, Ill., has resigned to organize the **Iron & Steel Products, Inc.,** Railway Exchange Bldg., Chicago. This company will do a general trading business in iron and steel products and railway equipment.

C. B. Nolte, vice president and general manager of **Robert W. Hunt Company,** Chicago, has been elected president, succeeding **John J. Cone,** retired. **J. G. Ogden,** a director and eastern manager, has been elected vice president with headquarters at New York.

The J. S. Coffin, Jr., Co. announces the following changes in personnel: **Robert P. Peckett, Jr.,** vice president, will have charge of sales in the northeastern territory; **Charles W. Wheeler** has been appointed service manager with jurisdiction over the service department, succeeding Mr. Peckett; **T. C. Browne** has been appointed publicity manager, all with headquarters at Englewood, N. J.

Curry & Co., Chicago, forest products, has been appointed sales agent for the **Chicago Calking Co.,** manufacturers of calking paper. This paper is used to calk openings in and around temporary grain doors when coopered or installed into grain cars for loading. It is special kraft paper, loosely twisted into rope form, put up in balls and packed four to a paper bag, all weighing 10¾ lbs. Calking paper is susceptible of no other use and is less expensive than ordinary flat paper. The product is in general use on the Santa Fe System, the New York

FOR THE CYLINDER AND VALVE WEARING PARTS OF YOUR LOCOMOTIVES---

HUNT-SPILLER
Air Furnace GUN-IRON

OFFERS GREATEST RESISTANCE TO WEAR—
KEEPS DOWN LOCOMOTIVE MAINTENANCE COSTS—
INSURES MAXIMUM LOCOMOTIVE EFFICIENCY—
AIDS IN CONSERVATION OF FUEL—
IS ADOPTED AND SPECIFIED BY THE
MAJORITY OF RAILROADS IN THE U. S.

SPECIFY
HUNT-SPILLER GUN IRON FOR YOUR NEW POWER AND USE
--- IN MAINTENANCE OF YOUR EXISTING POWER ---

HSGI
Reg. U. S. Trade Mark

HUNT-SPILLER MFG. CORPORATION
J. G. Platt, Pres. & Gen. Mgr — V. W. Ellet, Vice-President
Office and Works
383 Dorchester Ave. - South Boston, 27, Mass.

HSGI
Reg. U. S. Trade Mark

Central, Pennsylvania, Frisco Lines, and the Baltimore & Ohio. It is also used by the Paget Car Coopering Co., Buffalo, and the Grain Door Agency, Chicago.

The National Aluminate Corpn. of Chicago has bought the chemical products business of the **Paige & Jones Chemical Co.**, New York, and will operate this company as a division of the National Aluminate Corpn. The Paige & Jones Chemical Co. has sold its equipment business to the **Permutit Co.**, New York.

Harry T. Gilbert, vice president in charge of sales of the **Republic Steel Corpn.**, has been appointed assistant to the president, with headquarters at Youngstown, Ohio. **Norris J. Clark,** vice president and chairman of the executive committee of the **Lamson & Sessions Co.**, Cleveland, succeeds Mr. Gilbert.

The Reliance Railway Appliance Co., Ltd., Montreal, has taken over the exclusive right to manufacture and sell both in Canada and in the United States the tender water level indicator formerly handled by the **Economy Railway Appliance Co.**, Montreal.

B. E. Mercer, general superintendent of the **Union Steel Casting Co.,** subsidiary of the **Blaw-Knox Co.,** Pittsburgh, has been elected a vice president of the company.

The Heywood-Wakefield Company announces the removal of its executive office from 209 Washington street, Boston, to the building occupied by its salesrooms at 174 Portland street, Boston.

The Ramapo-Ajax Corpn. has let a contract to the Missouri Bridge & Iron Co. for a one-story addition to its plant at St. Louis to cost $25,000.

Electric Railweld Sales Corpn., Chicago, has appointed **John H. Roche** sales representative in the Chicago territory for the frog, switch and crossing reclamation department, with headquarters in the Buckingham Bldg.

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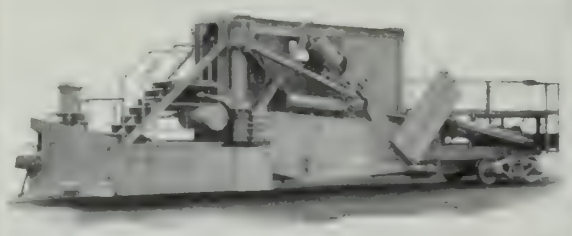

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The National Monthly
of the Transportation Industry

Vol. VII

No. 5

FEATURES *for November,* 1930

The Turk-Sib and Its Builder, *Bert G. Mitchell*

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The News of the Month.

In November

THE FIRST meeting of special interest to railroad men, this month, will be that of the National Association of Railroad & Utility Commissioners. This will take place November 12 to 15 at Charleston, S. C.

The Railway Business Association will have its regular yearly meeting November 19 at the Hotel Commodore, New York. At the closing date for this number of the magazine no formal program had been received, but members and others accustomed to attending these gatherings know the proceedings always are interesting and of great importance to the men at the head of railway matters.

The Peoria & Pekin Union celebrated the 50th anniversary of its incorporation, last month, by issuing an extremely attractive booklet entitled "Today, and in Retrospect," giving the history of the road, and setting forth its present standing in the railroad family of the Nation. The booklet, containing portraits of its officers and others who have to do with its development, showing some of the facilities, and presenting a well-told story worth reading, should prove a rare find for collectors of such material.

J. J. Pelley, president of the New Haven System, is to address the Association of Life Insurance Presidents in its meeting at the Hotel Astor, New York, December 11-12. Mr. Pelley will speak of "Railways and Otchr Ways." Other speakers will be Frank B. Noyes, president of the Associated Press, and Dr. Frank Glenn, president of the University of Wisconsin.

The Pacific Railway Club will meet at Salt Lake City Nov. 15, at the Newhouse Hotel.

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HAROLD A. SMITH, *President and Editor* — CHARLES DILLON, *Vice Pres. and M'ng. Editor*

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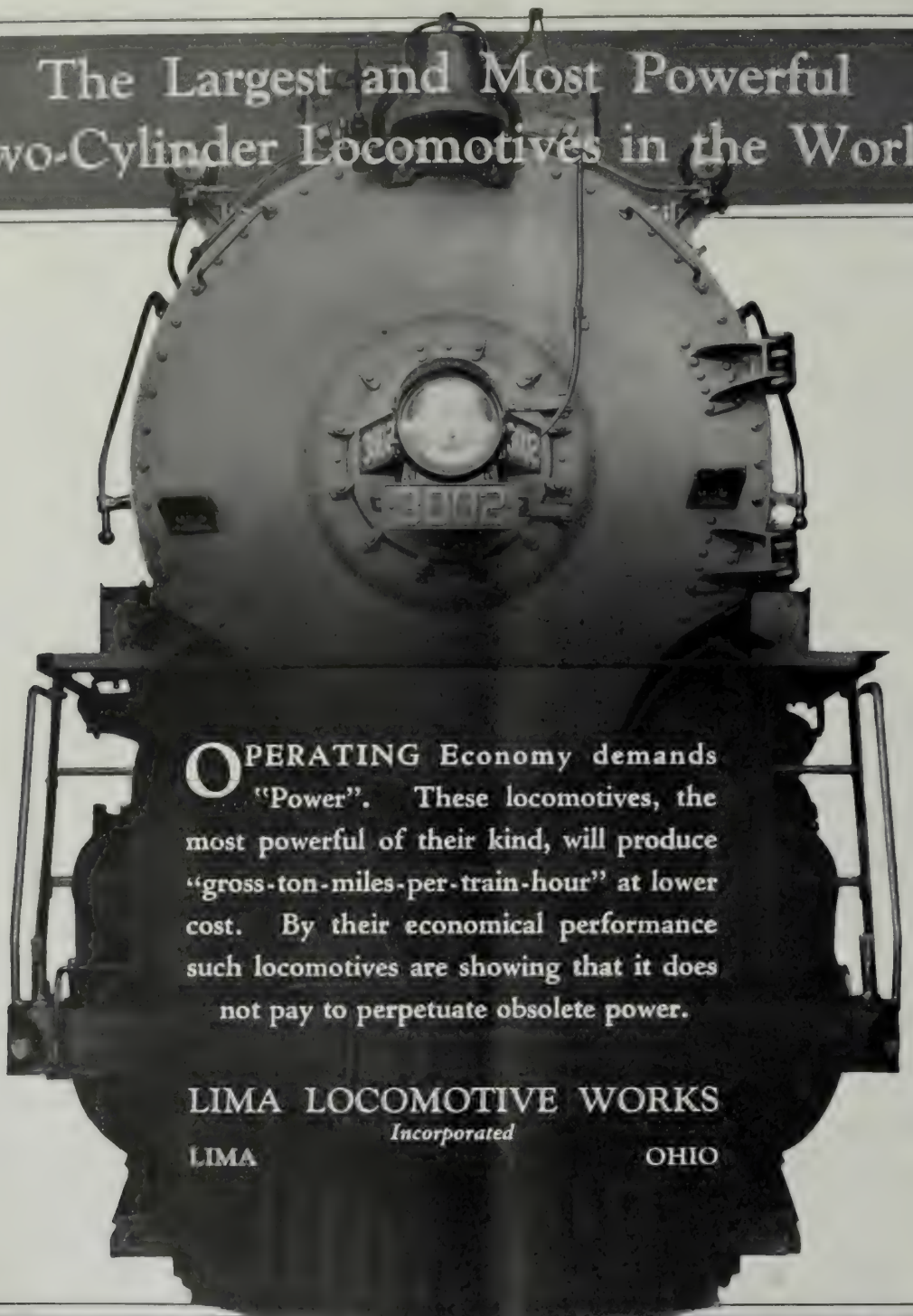

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Wide World Photo

Bill Shatov, the Soviet Government's Right Hand Man in the Building of the Turk-Sib Railroad, Was Once a Section Hand on the Erie.

The Turk-Sib and Its Builder

Bill Shatov, An Erie Sectionman, Finished the Road Ahead of Time

By Bert G. Mitchell

A group of American social workers were trying, one day in 1920, to get food supplies across the Manchurian border into the interior of Siberia, to feed several thousand German war prisoners stranded there. The leader of the group was trying his newly acquired Russian language on William, better known as Bill, Shatov, the one Soviet railway official then and there present who, alone, of all the visible world, could give the required permission. Bill stood the American's Russian just as long as possible, wondering doubtless what it was all about, and then exclaimed, much to the astonishment and chagrin of the social worker:

"Say, man, why don't you talk United States?"

When quiet had been restored it developed that Bill Shatov once was a section hand on the Erie Railroad. In those days, years ago now, Bill was not exactly angelic in disposition. Being Russian, and a radical of radicals, as we view them over here, he could not resist the call of the revolution in his native land. So one day he packed his things, his radical ideas included, and sailed away for the land of trouble. There his railroad usefulness soon set him going in his proper stride, a pace so rapid that before long he was a power where ties

and rails and the directing of workers were important. It seems a great distance from Shatov's job on the Erie to the building of the Turk-Sib Railroad, but Bill made it without a halt, and finished ahead of time. Today, wherever the road's name is heard there, too, you hear the name of the former section hand from the Erie. And it doesn't matter how you spell it.

At the beginning of the summer of 1930 a commission of American railway executives sailed for the Soviet country, at the official invitation of that government, to make a survey of the railways up there. Let us take a look at the situation that confronted the former section hand and the American railway executives.

The World War and the two civil wars that followed destroyed more than 9,000 miles out of a total of 36,500 miles of railways, besides wrecking 7,762 bridges. When 1919 came there were hardly 4,000 good order locomotives in the land. Even up to 1922 the traffic carried on all the roads was less than one-third of the pre-war volume.

The restoration of the pre-war railway system out of this wreckage, making it carry a traffic that conditions demanded should be in greater volume than the pre-war record was the stupendous job that confronted the Soviet government when it took up the reins of authority. In the beginning, conditions prevented the working out of a master plan, so reconstruction was undertaken where the dire necessity of the moment demanded, and to the extent of the money or credit that could be assigned.

As time permitted, more or less comprehensive plans for the railways of the country as a whole were worked out. When the five-year industrial plan was mapped out in 1927, transportation was considered a vital element, and large sums were budgeted for new construction.

A sentence or two sums up the extent of progress the Soviet government has made in accomplishing its greatest task. In 1913 there were 36,500 miles of railroad, 42,500 miles in 1917, 47,320 miles at the beginning of 1927. By the end of 1927 the total mileage was 47,941 miles. At present it is close to 50,000 miles. This table gives the sums invested for new equipment and new lines during the last few years. See Table No. 1.

It should be remembered that all the railways in the U.S.S.R. are owned and operated by the government under the direction of the commissariat for transport with the exception of a few short roads built by foreign concessionaires to connect their concessions with the existing system of railways. It should also be noted that these immense sums were secured inside the country, since no foreign loans can be floated. Since about 1923 the Soviet railways have been operated at a profit. The government figures are shown in Tables 2 and 3.

Under the carefully worked out five-year plan for the industrialization of the country all the producing elements of the country are to be speeded up. By October 1, 1933, the end of the present five-year period, it is expected the population will have increased 12 per cent, making increased passenger and freight traffic. The number of workers will be increased by 32 per cent, and the gross increase in production in industry is estimated at 136 per cent, reaching a total of more than 43 billion dollars. It is also believed that toward the close of the five-year period in 1933 the gross agricultural production will reach 22 billion dollars, an increase of 55 per cent.

The commissariat for transport is working on a basis of an 85 per cent increase in railway freight traffic alone by October 1, 1933. It is estimated that at that time the railways will be transporting yearly 160 billion tons of freight. To take care of this increased burden on the railways the management submitted a budget figure of $4,898,000,000 for railway construction and improvement for the five-year period. The State Planning Commission approved the figures and the commissariat for transport has been working under that budget since Oct. 1, 1927. It is hoped that this sum will put the Soviet railways in a position not only to take care of the traffic of 1933 but for a period thereafter.

One method of preparing for this increased traffic used by the Soviet railway authorities is that of making the operation of the roads more efficient and economical. For example, the average daily run for freight cars in 1913 was 46.12 miles as compared with 48.76 miles in 1927; the average daily run for freight locomotives in 1913 was 73.18 miles as against 79.82 in 1927. The average load of a two-axle freight car in 1913 was 7.6 tons and in 1927 it was 8.6 tons. The average make-up of freight trains in 1913 was 78.8 axles and it was increased by 1927 to 94.26 axles. The average daily freight car loadings for the last few years were:

1924-25	17,398
1925-26	24,007
1926-27	27,868
1927-28	31,185

The average number of employes on the railway system has increased as follows:

1923-24	715,000
1924-25	720,000
1925-26	840,000
1926-27	863,000

The economic recovery of the country to a certain degree can be seen in the foregoing tables and statistics.

In 1924 a little more than 500 miles of new railway construction was completed, most of it in the Central

WHAT'S IN A NAME?

WHEN THE article describing the Turk-Sib Railroad was received here it was noticed that the author, Bert Mitchell, had spelled the name of the principal character "Shatov." A few days later word came from A. S. Merz of 247 Park avenue, New York, saying that he had the man's business card, and that it bore the name "Schatoff." Then we learned that the Library of Congress had adopted the spelling used by Mr. Mitchell, "Shatov." So we wrote to Mr. Mitchell. This writer has had long experience in that part of Russia, is a world traveler, and certainly ought to know his vodka and kopecks if anyone does. In his reply he says:

I checked up on the various times when Bill Shatoff was mentioned in the despatches at the time of the completing of the Turk-sib Railway. It was always "Shatoff" or "Shatov." Then I asked some Russians if it could be Schatoff, and they said it could not. There is only one bare chance that a so-called Russian name could be brought into English with the letters "Sch". There are a good many Germans who have lived in Russia for a long time and intermarried with Russians. The name Schmidt is fairly common in the German colonies along the Volga. That name would be turned into Russian with the Russian letter that has the sound of our "sh" because there is no Russian letter that has the sound of the German "sch". In translating such words back into English it has to be recalled that they come from the German, are not Russian words, and that properly such words should have the "c" inserted between the "s" and the "h". I asked these Russians if Shatoff might be a German name and they said that it was not.

So, to give both writers an even break, we have let Mr. Mitchell have his Shatov, and Mr. Merz his Schatoff, and both are welcome. "My name," said Bacon, "I leave to men's charitable speeches, to foreign nations, and to the next age."

Asiatic part of the Union of Soviet Socialist Republics with the exception of about 150 miles in White Russia. In 1925 the only construction took place in the Ukrainian Republic of the U.S.S.R., two short lines making a total of 186 miles of new construction. In 1926 nearly 900 miles of new lines were built. These new lines were principally short branches in various parts of the republic leading from the existing system and penetrating rich producing areas that had hitherto been untouched. The largest piece of work that year was the Achinsk-Minusinsk line in South Siberia. This connected a big grain country and many coal mines with the Transsiberian railway.

Under the Czarist regime the idea of a road through South Siberia paralleling the Transsiberian was often flirted with, and some preliminary work was done. The Soviet engineers have pushed this project. Work has been going on for some years on a railway that will connect Orsk (on the European border of Russia east of Orenburg) with Barnaul in South Siberia. This latter town already is connected with the Transsiberian by a branch road up to Novosibirsk (formerly Novonikolaievsk). When completed this road will be 1250 miles long.

The bulk of this new construction taps the great grain producing areas of South Siberia. The country bounded approximately by the towns Novosibirsk and Omsk on the Transsiberian, and Semipalatinsk and Barnaul in South Siberia includes the great wheat producing steppes, and can be compared to our Kansas and Nebraska prairies. Before the war this area was called "the granary of Europe." During the harvest season the railways were congested, much of the grain remaining stacked along the lines for a long time.

And This, Friends and Countrymen, is the Banner of a Railway Union on Parade in Siberia.

The crowning achievement of the Soviet railway authorities from the standpoint of future economic development and of difficult railway construction is the building of the Turk-Sib railway (Turkestan-Siberian). This railway opens up a rich, fertile area of more than 350,000 square miles. The economic problem of that area was how to ship its cotton and get grain and timber in exchange. The grain had to come from Siberia and the timber from the Urals, traveling a circuitous route of over 2000 miles to reach the consumers. The new line reduces this journey to approximately 750 miles.

This grain was too expensive by the time it reached its destination for a great amount of it to be used. Central Asia is especially adapted to cotton growing, and Soviet authorities would like to keep at home some of the $60,000,000 it spends yearly in the United States for cotton. But a good part of the cotton area of Central Asia had to be planted to grain to secure enough cheap food. The Turk-Sib line releases for cotton growing thousands of acres of land formerly planted to grain. With the completion of the $250,000,000 irrigation works in Turkestan the U.S.S.R. hopes to be exporting cotton in years to come.

The Soviet government gives the credit to William Shatov, who had complete charge, for pushing to completion the construction of the road months ahead of time, and at less than the expected cost. The construction problems confronting Shatov were immense. The new line traversed mile after mile of uninhabited territory. So few trained workers could be secured that schools were set up to train the raw recruits. Supplies and machinery had to be transported to the job on camels. To keep up to schedule in the construction program, the section through the high Chokpar Pass over the Trans-Ily-Altai mountains had to be built during the cold and stormy days of winter. The original plan was to have the road completed in 1931 but it was officially opened for through

These Kazaks From the Primitive Interior Had Never Seen a Railroad Until the Turk-Sib Came Along. The Switchlight Thrills Them.

Fergus A. Flanagan, Now a Dispatcher for the Southern Pacific at Los Angeles, Did the Same Work for the Chinese Eastern and the Manchurian Railway Just After the World War.

traffic over the 920 miles of new construction on May 1. The cost of the project was close to $100,000,000. The Soviet government is proud of the fact that this line was built throughout with Soviet money, labor and materials.

On completion of the new line it was first thought wise to keep the thousands of men, who had been at work on the construction, in the little villages that have sprung up along the whole length of the new road. They would be the operating personnel. On second thought it was considered economically wiser to keep these trained builders together, and use them under William Shatov in the projected new railway construction in other parts of the republics.

Consequently there is this interesting and unusual situation. The more alert and ambitious of the wild tribesmen of Central Asia have been flocking to watch the construction of the railway, and many have decided to remain in the new villages. The railway authorities are training these men, some of whom had never seen a railway but are familiar with the country, to be section hands, conductors, freight handlers, ticket agents, telegraph operators, and other employes of the railway.

With all these features of the immense transportation problem accomplished and with a large program for the future, the Soviet authorities decided to send to America for additional expert technical advice on their railway situation. They therefore invited several American railway men of long experience, preferably men out of the engineering ranks, who had risen to high positions. One can not resist the temptation to wonder how these officials enjoyed themselves when and if they met Bill Shatov, formerly Erie section hand. Certainly *someone* must have reached into the sacred cannery for the old reliable bromide: "Well, Bill. It's a small world, isn't it?"

And now for the observations of Ad. S. Merz of New York. Mr. Merz went over, through and round about Russia during the past summer. Indeed it was he who imported the business card whereon Bill Shatov had caused his name to be engraved as Schatoff, which Bert Mitchell says someone told him was the German for the name we have been using. But quite aside from all discussion of names, Mr. Merz brought back some interesting information, a part of which is set down here, just as he dictated it, (we hope) in New York, including the Schatoff.

Mr. Merz was favorably impressed, he says, by the friendly attitude and businesslike way in which the heads of the various departments in the commissariat of transport in Moscow carried on their affairs with respect to appointments, their eagerness to adopt American methods of operation and American design of equipment, their earnestness and honesty.

Says he: "Probably the most colorful character in the Russian railroad world today is Bill Schatoff, who recently completed the construction of the Turkistan-Siberian Railroad, over 1000 miles in length, eighteen months sooner than they had anticipated. It was he who specified practically all American machinery for the construction of this railroad, and he is a strong supporter of American operating methods and American design of rolling stock. While engineer of construction of this railroad, I am informed that he was always out on the line, explaining to the workers the importance of this project, what it would mean to the people in that territory, showing an interest in the living and working conditions of his men, and was the greatest driver of all time. In my visits with him, when he proudly showed me the medals he had received from his government for meritorious service, his attractive personality, enthusiasm for the future of his country and his work, and his human interest in his employes, impressed me, and it occurred to me that here is a new type of Russian 'driver' which his country could use more of advantageously. Born in Russia, he came to this country when a young man, worked as a hod carrier, section hand and later as a boomer switchman and brakeman, during which time he became identified with the I.W.W. movement, and was very active in their affairs. Upon his return to Russia at the time of the 1917 revolution, he took an active part in the reconstruction of that country and was given various assignments of importance, at all of which he made good, until today he is one of the most influential men in the Soviet government.

"The report of Mr. Mironoff, head of the delegation of railroad en-

Table No. 1

	New Equipment	New Lines	Total
*1923-24	$ 28,000,000	$ 510,000	$ 28,510,000
1924-25	36,000,000	8,750,000	44,750,000
1925-26	85,500,000	13,800,000	99,300,000
1926-27	97,750,000	19,000,000	116,750,000
1927-28	167,000,000	33,400,000	200,400,000

*Note—Where years are given thus "1923-24", it means from Oct. 1, 1923, to Oct. 1, 1924, which are the limits of the Soviet fiscal year.

Table No. 2

	Operating Revenue	Operating Expenditures	Net Profit
1924-25	$467,000,000	$393,000,000	$ 74,000,000
1925-26	661,250,000	570,175,000	91,075,000
1926-27	767,700,000	650,000,000	117,700,000

Table No. 3

	1913	1924-25	1925-26	1926-27
Passenger Traffic				
Passengers carried (millions)	....	211.8	262.7	254.3
Passenger miles (millions)	15,510	11,700	14,400	13,500
Freight Traffic				
Tons (millions)	....	81.4	113.5	133.2
Ton miles (millions)	40,402	29,160	42,505	50,803

gineers who studied our methods in this country for a period of three or four months this year, published in the 'Pravda' shortly after his return to Moscow, relative to the courteous treatment and the cooperation received from American railroad men, in their efforts to obtain knowledge, had a very good effect and in railroad circles this was mentioned to me a number of times.

"The vigorous campaign they are conducting to educate their people, their program for child welfare, their teaching of personal hygiene, I felt was a hopeful sign.

"The transportation problem is one of the most important questions before the government today. To complete their five-year industrialization plan the people are called upon and are making tremendous sacrifices, and I was impressed with the patience with which railway employes perform their daily duties under very difficult conditions.

"I feel that more of the fresh air of international intercourse, closer association with the capitalistic world, more cooperation and less condemnation, will do much to help Russia solve her problems and will result ultimately to the benefit of all mankind."

There'll be Branches After a While to Eat Up the Net, But Right Now Camels Are Doing the Work in Siberia As Feeders for the Main Stem.

Beware of Low Voltage Currents

Contact with the so-called low voltage electric current, carrying charges of from 110 to 750 volts, is always dangerous and under certain conditions, fatal. There have been more than 100 such cases which have resulted fatally in the United States and Canada during the past two years. This is a small number, of course, compared with accidental deaths in other fields, yet it brings out the fact that the dangers of low voltage are quite generally underestimated.

For the past year a special committee of the American Society of Safety Engineers, engineering section, National Safety Council, has been studying low voltage hazards and the peculiar circumstances surrounding the cases which have come to its attention. The progress report which has just recently been completed reveals some interesting facts:

Forty-four or more than two-fifths of 107 cases studied were caused by the ordinary 110 alternating current voltage.

There were 58 purely industrial fatalities in the group, nine mine fatalities and four railroad tragedies. Home fatalities rank second to industry with 31 deaths. Bathtub fatalities led the domestic list with 12 deaths. Next in importance came fatalities from contact while on wet basements or earth, with seven fatalities. Portable appliances came next in the home with six tragedies, and amateur experiments caused one fatality. There were several instances where the victims were working under cellarless houses with portable electric lamps.

The Milwaukee Improving Still

A huge still is to be erected in Milwaukee. Not in anticipation of modification of any existing laws, but in the interest of railroad efficiency and economy. It will distill reclaimed oil used to lubricate journals on Milwaukee freight cars. The new plant is to be erected at a cost of approximately $100,000 and will be placed in operation about January 1, according to K. F. Nystrom, superintendent of the car department.

Machinery recently perfected cleanses the waste and extracts oil which is distilled to eliminate foreign matter. About 4,500,000 pounds of waste will be treated yearly, of which 80 per cent will be recovered.

Sacked Grain Piled Along the Line in Siberia Awaiting Shipment. Photo by the Author.

Common Sense

The Missouri Pacific has been authorized by the railway commission of Nebraska to substitute bus service for two of its passenger trains between Omaha and Kansas City, being operated at a loss of $9,500 a month. The commission found that the territory was oversupplied with passenger transportation facilities, and declared that where the people will not make such use of steam trains as will be profitable to the carriers it will not compel the carriers to maintain them so long as mail and express service is not materially impaired.

D. F. Crawford Joins the Staff

Distinguished Engineer of Long Experience a Notable Addition to the Editorial Department

David Francis Crawford, widely known consulting engineer, has agreed to share in the making of *Transportation* in an editorial capacity, giving his attention principally to those subjects with which his long training makes him especially well acquainted.

This announcement, the management of the magazine believes, is by far the most important it has had the pleasure of making since *Transportation* was established, nearly four years ago, assuring to readers and advertisers the finest engineering qualities possible to obtain in this type of journal.

It would be difficult to select anyone so well fitted for the particular tasks Mr. Crawford is to assume. Indeed, his activities in the engineering-scientific world have been, and still are, so varied and so important in the field of transportation that one wonders over a life so crowded with worthwhile accomplishments.

Looking over the record of his professional career to the present; contemplating the amazing activities in which he has taken part; his contribution to the betterment of the industry with which he has been associated for so many years; reading the names of the almost innumerable scientific societies of which he is a member, one falls quite naturally into the mistaken idea that Mr. Crawford must be a solemn personality concerned only with engineering or other highly scientific matters. It is a pleasant surprise, therefore, to find in the impressive biography at hand, notations showing him to be director and treasurer of the Guernsey Breeders' Association of Western Pennsylvania, an honorary member of the Guernsey Cattle Club at Sewickley, Pa.; that he holds life memberships in the American Guernsey Cattle Club and the Humane Society of Western Pennsylvania, and that he is a trustee of the Homeopathic Hospital of Pittsburgh.

Someone said, a few years ago, that the engineering profession had done so many important things, especially in this generation, for the advancement of industry which, after all, means for the comfort and convenience of humanity, that it seemed doubtful whether anything more could be done. Still, what these men have written into the history of America, and of the whole world, for that matter, has made and continues to make its impress upon the lives and careers of thousands of ambitious young men moved, no doubt, by the fine example of the masters and their work for the betterment of life.

David Francis Crawford

In all these chapters of achievement the work of no engineer, perhaps, has been more inspirational than that of D. F. Crawford who now is to contribute his mature judgment to the continued improvement and value of *Transportation,* particularly with respect to matters with which his long experience make him most competent to deal.

Somewhere in this issue a writer, describing the career of an executive, refers to what have become known as the bromides of success: hard work, study, midnight oil, loyalty. Every one of these qualities is found in the story of David Crawford's rise. He was born in Pittsburgh in 1864, the son of an iron manufacturer. On his father's side, his ancestry is Scotch while on his mother's one finds Dutch, German and French, the first of whom went to Pittsburgh some time in 1798.

The boy was only three years old when his father died. The public schools and one year at the Pennsylvania Military Academy constituted his elementary education. With this period behind him the young man started his earning career as a clerk in the freight office of the Pennsylvania Railroad in Pittsburgh, kept the job for four years, and then served a special apprenticeship of equal length in the company's Altoona shops. After this had been finished young Crawford began to move forward rapidly. He became inspector of the test department at Altoona, then assistant master mechanic at Ft. Wayne; next, assistant superintendent of motive power at Fort Wayne. After this he became superintendent of motive power at Fort Wayne; then general superintendent of motive power for the Pennsylvania lines at Pittsburgh, a

(Continued on Page 40)

The Couriers of the Air

Thrills in the Pilots' Reports

By W. J. Kennedy

—P & A Photo.

Part of Great Air Fleet of 125 Planes That Flew From Hampton Roads, Va., Over Washington, New York and Other Cities on the Atlantic Seaboard. Over the Canyons of Lower New York City.

THRILLING tales of heroism sometimes are found in dreary-looking government reports. Statisticians find only the figures; engineers seek out the technical facts; the writing man, looking for something he can sell, something with general, human interest in it, seizes upon the romance, the thrill, the heroic, or the grimly tragic.

Good stories, as writers call such things, have come out of the dead letter office, that government reservoir of human disappointment, but the air mail service seems likely to surpass it as the postoffice department gathers the records for the archives at Washington. Such files are not often disturbed. Until recent years the department has been reticent to the point of taciturnity, at least until appropriations were being considered, working faithfully, living up to its old traditions, seeking no publicity.

One of the sacred rules of the postoffice department, ever since it was founded, has been that nothing shall be permitted to stop the mails, snow, rain, sleet, fog, floods, wrecks, the mail must go through. Just as long as it was humanly possible this tradition has been maintained. The suffering, sacrifice, effort it cost has seldom been greatly appreciated or well understood. Once in a while it may be wise to let the thoughtless public know something of the service that makes possible the regular and ordinarily prompt handling of its letters.

The younger part of the population may be pardoned if it fails in its enthusiasm over the fine work done by the air mail pilots. To receive a letter 30 hours after it was mailed in New York, 3,500 miles away, has become a commonplace, perhaps, for these Citizens of Tomorrow, but for men and women who waited weeks or months for word from across the continent in the days of pioneering such service is one of the world's marvels. The dauntless spirit of these pilots is shown in a letter found in the pocket of Pilot Capt. Hyde-Pearson, who was killed in a crash in Pennsylvania in 1925, when he was carrying mail westward from New York. The letter was in an envelope marked: "To be opened only after my death." The letter read:

"To my beloved brother pilots and pals: I go west with a cheerful heart. I hope what small sacrifice I have made may be of use to this cause. When we fly we are damned fools, they say. When we are dead we weren't half bad fellows. But everyone in this aviation service is doing the world more good than the public can appreciate. We risk our necks; we give our lives; we perfect a service for the benefit of the world at large. They, mind you, are the ones who call us fools. But stick to it, boys."

Official department reports show many cases similar to that of Capt. Hyde-Pearson, where pilots have faced injury or death with the one hope that the mail might be delivered as scheduled.

"Pilot Paul P. Scott was flying from Reno to Salt Lake City," says a department report of heroism in air mail service, "and, while flying over ground fog the radiator of the ship exploded and the motor caught fire. Pilot used pressure fire extinguisher and fought fire in the air.

"He finally made a good landing on the first available field east of the lake shore. Upon landing he climbed

on the lower left wing with the hand extinguisher and fought the fire while removing the mail from the pit. Mail was all thrown on the ground and carried to a point some 50 feet away from the plane.

"Pilot was exhausted and while resting before attempting to remove the mail farther the gasoline tank exploded, throwing gas and fire in all directions. The pilot made every effort to rescue the mail, but the heat, smoke and fire were so intense that he could not approach the mail bags."

The same pilot figured in another serious accident while flying from Salt Lake City to Elko, Nev. Snow was falling, and a heavy fog and low clouds made flying conditions dangerous. Pilot Scott saw a "small hole" between fog and clouds and flew into it, after which the hole closed. He tried to climb out of danger, but suddenly, he says, he found himself "knocking the tops off cedar trees." Then there was a crash, and he lost consciousness.

"When I came to," his report said, "my face was buried in the snow and I was groping for the switches. The cockpit was upside down. My left hand and arm were numb and useless. With my right I dug out enough snow to pull myself from under and found a scrambled mass of bits of three-ply fabric, wires and broken wings, with motor, radiator and batteries scattered all around in the brush.

"My left shoulder was dislocated and my left arm freezing rapidly, dangling behind my back. I started down the mountain in what I thought to be the general direction of a road. The snow was deep, there were many rough rocks, and the walking was difficult.

"I slipped on some shale and suddenly discovered I had knocked my left shoulder back into place. I rubbed my left arm and hand with snow until it thawed and felt normal. I walked down to the road, got to the railroad tracks, flagged a passenger train, and then sent a wire from Wells, Nev., the first stop."

Pilot L. L. Bowen, flying east from Omaha, encountered storms near Valparaiso, and decided to land, but found the field so covered with water that he was forced to turn back toward Omaha.

The two electrical storms met, and because of poor visibility he lost his way. After flying several minutes he discovered the light at Gretna, which he circled several times, but could not find a suitable place to land.

However, he did recognize a road leading toward Lincoln, which he attempted to follow until he came to the Burlington tracks, which would lead him to Omaha. While following the road he evidently went through a cut, as he scraped the left wing light on the ground just enough to break the lens and fill the streamlining with mud and weeds.

Upon feeling the left wing touch he pulled the ship up into the low clouds and again became lost, but after a short time found the Burlington tracks and went into Omaha, landing on the field at 2:10 a.m.

"Bowen's air speed was registering 130 miles an hour at the time the left wing touched the ground. This is considered a very narrow escape. Had he been 8 inches closer to the ground the wing would have caught and at the rate of speed at which he was traveling it would probably have been one of those cases in which he never would have known just what happened."

Assistant Postmaster Glover later said "Pilot Bowen surely knocked on the door of eternity that morning."

Pilot Biffle was coming to land on the field at Omaha, says one of the official reports. "He approached from the north over three tall cottonwood trees near the north edge of the field.

"As he was about to clear one of these, his ship settled unexpectedly and Biffle found himself staring the rapidly approaching tree directly in the face. So he advanced his throttle to lift the ship over this obstruction, but for some reason the motor did not at once 'take.'

"Biffle decided that his only chance was to hit the tree as squarely as possible, for there was no time for him to avoid it.

"His aim could not have been improved upon, for he struck the tree squarely with the hub of his propeller. At the same time his motor got back on the job. He opened the throttle and forced the ship through the branches, across the trolley line and into the field. He taxied up with branches and limbs of all sizes sticking through the wings and radiator. Motor, fuselage and tail were undamaged, but leading edges of both upper and lower wings were badly hacked up, propeller tips were curled up and the radiator had a hole plugged in it."

Wide World Photo

Four-Room Plane Built by the Fokker Aircraft Corpn., for a General Motors Executive. Seats for 16, Berths for Four, Kitchen, Refrigeration, and Full Dining Service.

Bits of comedy are mixed with tales of tragedy in official records, also. Reports tell of one pilot who landed squarely on a jack rabbit, and of another who collided with an eagle in midair. Another tells the story of a dog on a landing field trying to bite a chunk out of a whirling propeller. The dog was instantly beheaded, and the head was hurled through the air, hitting a pilot standing nearby, and knocking him unconscious.

The most humorous tale of the air mail service concerns Pilot Unger, who made a very dangerous forced landing, escaped unhurt, then was injured getting off a horse. His report says:

"I was crossing the Ruby mountains at about 10,500 feet when I broke a set of gears and landed in a very small field in Secret Pass. A

safe landing was made with difficulty owing to small space and high altitude. A rancher riding the range saw me land and rode over and let me take his horse to ride to the nearest ranch, eight or 10 miles away. After phoning Elko for help, I started back to the ship on the horse.

"I mounted, or started to mount, and as all true western horses do, this one took off to a climbing turn before I got in the seat and had my safety control belt fastened. To make a long story short, I overcontrolled, her nose went down and I spun or sideslipped — I don't know which—into the ground with great speed.

"I broke my left ankle in two places and was well shaken up by this forced landing. After filling the air with smoke, which must have dazed the horse, I managed to catch him.

"We took off in a gentle lope and returned to the ship. Help came at last, the motor was repaired and I flew the ship to Elko. I had the boys tack a strap on the right rudder bar so I could pull as well as push. This made up for the loss of my left foot.

"I took off for Salt Lake with the regular mail as usual, as there was no other pilot available."

Equipping An Air Line

By R. W. Cost

The time table of a modern consolidated air line is extraordinarily interesting to the average person not familiar with the exceptional progress and development of this new method of rapid transportation. In addition to the time of departure and arrival, the fare between the various cities is listed and notations are made regarding facilities for dining, smoking, and so forth. An accompanying map usually shows the whereabouts of airways and airports of the system, and we begin to think of distances between stations in terms of mileage "as the crow flies." Based on the time element of this accelerated travel, the American continent has shrunk from one-half to one-third its former size.

Just as the motor coach has developed into an auxiliary to the electric railway for improved service to the public, so has the airplane been employed to enhance rapid transportation in conjunction with the service provided by railroads. With the present development of the airplane as a vehicle for passenger transportation, flying has been for the most part confined to daylight operation, and the railroad with the Pullman car accommodations carries the passengers by night. Within a few years it is probable that we shall have flying Pullmans from coast to coast with luxurious accommodations, requiring only two or three stops en route for fuel and other supplies.

One of the most important navigational aids for night flying through thick weather, the development of which was supervised by the federal bureau of standards, is the radio beacon. These beacons guide flyers on their courses by means of directional radio transmitters on the ground, usually placed at intervals less than 200 miles apart. A radio receiving set on the airplane tuned to the proper wave length produces sounds in the head 'phones which indicate whether the flyer is on his course or whether to the right or left of it.

Without adequately lighted airways and airports, rapid transportation of express by airplanes connecting with trains would be of limited value. Commercial aviation attains its greatest usefulness through the addition of night schedules, since a greater radius of business intercourse is made possible between the end of one business day and the beginning of the next 24 hours.

The airways division of the department of commerce has installed 24-inch revolving beacons at intervals of ten miles along only those portions of existing routes on which the present schedule demands flying in the dark of early morning and late evening. The only exception to this ten-mile arrangement is at the ends of each route and intermediate airports. The first beacon is placed about 20 miles from the terminal field, the second at 40 miles, and at ten-mile intervals thereafter. In the center ten miles of each of these 20-mile intervals, there are placed four small flashing gas beacons. This combination near the terminals offers an opportunity for comparison under different weather conditions.

The advantages of distinctive flashes are such that the newer beacons now being installed have, in addition to the standard 24-inch rotating beam, two "course" lights. These units are incandescent projectors having from 14-inch to 18-inch parabolic reflectors with 500 watt lamps as light sources. The two units are directed in opposite directions along the airway. A spread lens front door is used on the course unit, which spreads the beam horizontally through an angle of approximately 40 degrees. This beam spread is necessary on account of the latitude which must be allowed to a flyer on an airway, since a pilot seldom flies directly over the beacons. He may be two or three miles to right or left. The revolving beacon carries some form of make and break contactor, so that as it revolves it will make and break the circuit to the course lights, giving them a distinctive flash, syn-

Mr. Cost is railroad and aviation lighting engineer for the Westinghouse Lamp Co.

MIDCONTINENT AIR EXPRESS

SCHEDULES AND TARIFFS

OFFICES

DENVER, COLO.—1717 Tremont, Keystone 3226—Municipal Airport, Franklin 1681.
ALBUQUERQUE—Franciscan Hotel, 864—W. A. E. Airport, 3353.
AMARILLO—English Airport, Phone 5600—Herring Hotel, Phone 5251.
COLORADO SPRINGS—Pikes Peak Air Commerce, Main 359—Municipal Airport
DALLAS—Love Field. Phone 53192
EL PASO—Standard Airport, Main 221.
FT. WORTH—Municipal Airport.
LAS VEGAS, N. M.—Midcontinent Air Express Airport—Chamber of Commerce.
LOS ANGELES—113 W. 9th St., TRinity 9191—W. A. E. Airport, ANgelus 2141.
OKLAHOMA CITY—Skirvin Hotel(C.A.M.A.)—Municipal Airport. Phone 7-6222
PUEBLO—Congress Hotel, 1900—Municipal Airport, 1197.
SANTA FE, N. M.—Midcontinent Air Express Airport—DeVargas Hotel.
TULSA—Mincks Hotel—Municipal Airport.
WICHITA FALLS—Holt Hotel—Municipal Airport.

DENVER—ALBUQUERQUE—EL PASO

Southbound	Daily	Northbound
10:00AM M.T.	Lv.....Denver.....Ar	5:30PM M.T.
10:45AM M.T.	Lv.....Colorado Springs.....Lv	4:50PM M.T.
11:20AM M.T.	Lv.....Pueblo.....Lv	4:15PM M.T.
1:10PM M.T.	Lv.....Las Vegas.....Lv	1:50PM M.T.
1:45PM M.T.	Lv.....Santa Fe.....Lv	1:05PM M.T.
2:30PM M.T.	Ar.....Albuquerque.....Lv	12:20PM M.T.
2:50PM M.T.	Lv.....Albuquerque.....Ar	12:01PM M.T.
5:00PM M.T.	Ar.....El Paso.....Lv	9:15AM M.T.
2:45PM M.T.	Lv.....Albuquerque.....Ar	12:01PM M.T.
8:00PM P.T.	Ar.....Los Angeles.....Lv	5:00AM P.T.

TO / FROM	Denver	Colorado Springs	Pueblo	Las Vegas	Santa Fe	Albuquerque	El Paso	Los Angeles
Denver.....	....	$7.50	$10.00	$25.00	$30.00	$35.00	$55.00	$97.00
Colorado Springs	$7.50	....	5.00	20.00	25.00	30.00	50.00	92.00
Pueblo.....	10.00	5.00	....	17.50	20.00	25.00	45.00	87.00
Las Vegas.....	25.00	20.00	17.50	....	7.50	10.00	31.00	72.00
Santa Fe.....	30.00	25.00	20.00	7.50	....	5.00	26.00	67.00
Albuquerque....	35.00	30.00	25.00	10.00	5.00	....	21.00	62.00
El Paso.....	55.00	50.00	45.00	31.00	26.00	21.00	....	64.00
Los Angeles....	97.00	92.00	87.00	72.00	67.00	62.00	64.00	....

A Page From the Time Tables of the Midcontinent Air Express.

American Airways Tri-Motored Fokker at the Company's Los Angeles Terminus, United Airport, Burbank. Left to Right: J. B. Alexander, Western Manager, Southern Air Fast Express Division; F. G. Coburn, President, American Airways; G. B. Grosvenor, Vice Chairman, the Aviation Corporation of Delaware; J. B. Hamilton, Manager, United Airport.

chronized with the beacon flash.

On sections of the airways where electric service is not conveniently available, acetylene flashing beacons are spaced at three-mile intervals. The unit consists essentially of a double lantern, one mounted above the other. The top lantern is an azimuth and zenith light having a separate flasher, operating at 40 flashes of 500 c.p. per minute. The lower lantern is a course light with a 15-degree horizontal beam spread rated at 5000 c.p. operating at 20 flashes per minute. This type of beacon is quite reliable with its dual lantern, and operates without attendance for six months or more.

Emergency landing fields are located at intervals of 30 miles, and each usually is equipped with a standard rotating beacon, an illuminated cloth cone wind indicator, and boundary lights on the landing area. The construction and illumination of airports does not come under the jurisdiction of the department of commerce, but if certain conditions are complied with, a definite rating for size, service facilities, and night flying facilities will be given. Airports completely equipped receive first consideration for inclusion on contract air mail routes established by the U. S. postoffice department.

Airplane Development

A French government commission examined 160 new types of airplanes in 1929. Of this number 52 were military land planes, 66 commercial or racing land planes, 21 military seaplanes and 23 commercial seaplanes. Of the types submitted, only 72 were actually ordered by the government, that is authorized for construction at government expense. Provisional approval was given to 87 other types. The government does not agree to buy the planes for which provisional approval is given. These planes are constructed at the expense of the manufacturers, but may be bought by the government if they are favorably received after construction.

Faster Air Mail

Los Angeles businessmen are finding the new air mail connection made possible by the Southern Air Fast Express—Los Angeles-Dallas route C.A.M. 33 of increasing usefulness, according to Ned Kimbrough, division traffic manager of the line. The connection through Brownsville saves 24 hours over previous air mail schedule which was routed through Salt Lake City and Omaha instead of direct. The new service is as follows to Mexico and the west coast of South America:

Lv. Los Angeles.	5.35 a.m.	Sunday
Ar. El Paso	12:48 p.m.	Sunday
Ar. Big Springs..	4:40 p.m.	Sunday
Ar. San Antonio.	8:00 p.m.	Sunday
Ar. Brownsville .	8:15 a.m.	Monday
Ar. Tampico	11:00 a.m.	Monday
Ar. Mexico City.	1:45 p.m.	Monday
Ar. Vera Cruz...	8:00 a.m.	Tuesday
Ar. Guatemala ..	2:30 p.m.	Tuesday
Ar. San Salvador.	4:45 p.m.	Tuesday
Ar. Managua	9:00 a.m.	Wednesday
Ar. San Jose	12:45 p.m.	Wednesday
Ar. Panama City.	4:30 p.m.	Wednesday
Ar. Cristobal	5:30 p.m.	Wednesday
Ar. Saint Elenn..	5:20 p.m.	Thursday
Ar. Lima	5:20 p.m.	Friday
Ar. Arica	1:10 p.m.	Saturday
Ar. Santiago	3:30 p.m.	Sunday
Ar. Buenos Aires	3:50 p.m.	Monday
Ar. Montevideo .	5:30 p.m.	Monday

To Florida, Cuba and the East Coast of South America the schedule is:

Lv. Los Angeles.	5:35 a.m.	Friday
Ar. Dallas	7:20 p.m.	Friday
Ar. Atlanta	4:25 p.m.	Saturday
Ar. Jacksonville .	10:00 a.m.	Sunday
Ar. Miami	1:45 p.m.	Sunday
Ar. Havana	4:15 p.m.	Sunday
Ar. Port Au Pr..	1:50 p.m.	Monday
Ar. San Juan	8:25 a.m.	Tuesday
Ar. Port of Spain	6:00 pm..	Tuesday
Ar. Georgetown .	11:45 a.m.	Wednesday
Ar. Paramaribo .	2:45 p.m.	Wednesday

Postage 5c first ounce; 10c each additional ounce to points in United States, Mexico and Canada.

Air Mail Speedy As Telegraph

New overnight air mail-passenger service flown by Boeing System between Seattle, Tacoma, Portland and California cities gives as speedy delivery of air mail in California as night letters telegraphed. This line lacks only 115 miles of spanning the entire air distance between the Mexican and Canadian boundaries.

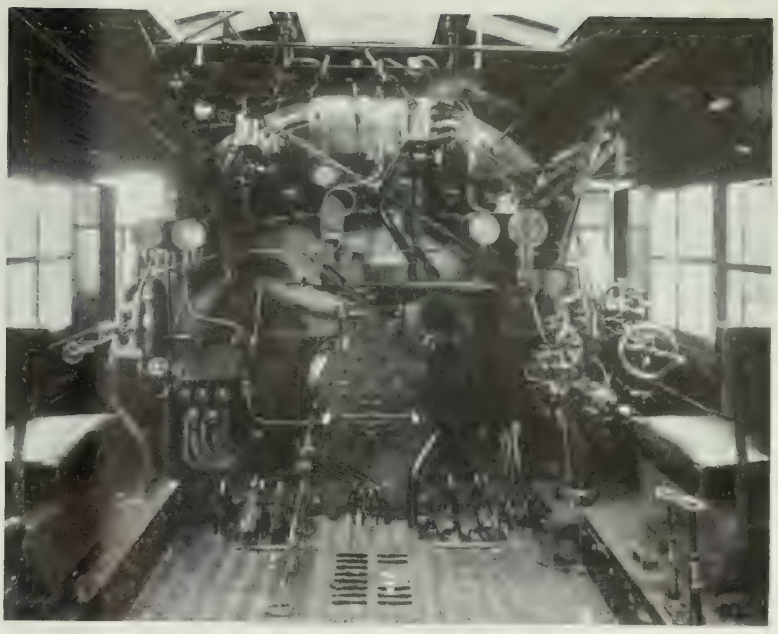
Letters posted at the close of business in Washington and Oregon cities reach San Francisco shortly after midnight, Los Angeles before breakfast and San Diego at the breakfast hour. Mail is distributed on the first morning carrier delivery.

"People always insist that they have been investing when they win and admit speculating when they lose."—*Albert Atwood.*

The World's Most Powerful 2-Cylinder Engines

Lima Delivers 20 of 48 Freight Locomotives to Chesapeake & Ohio

By W. R. Harper



Cab of the 3004, One of the Two-Cylinder Lima Locomotives Delivered to the Chesapeake & Ohio As Part of An Order of 48.

THE FIRST twenty of a series of forty-eight freight locomotives of the 2-10-4 type, the largest and most powerful two-cylinder locomotives in the world, have been delivered to the Chesapeake & Ohio Lines. The others will follow in steady succession. These deliveries, and those to follow, represent a part of the $42,000,000 equipment expenditure announced some time ago for all the Van Sweringen lines.

Built by the Lima Locomotive Works, these powerful machines are constructed on plans prepared by the Chesapeake & Ohio mechanical department, with T. F. Barton as superintendent of motive power, and under the general supervision of W. G. Black, mechanical assistant to the president.

With the completion of the immense Presque Isle development at Toledo into the most modern coal and ore dock in the world, the Chesapeake & Ohio prepared its equipment plans so that the fullest advantage could be taken of the improved lake operation for the handling of coal and ore. Delivery of these locomotives, all of which are for service on the Northern and Hocking divisions between Russell, Ky., and Toledo, will materially augment this company's fine facilities for the speedy movement of coal from the West Virginia fields to the Lake Erie port for trans-shipment to the great industrial districts of Michigan and the Northwest, and for the prompt handling of ore from Toledo to its destination.

There are many distinctive features of construction that enable these locomotives to handle heavy freight trains with a minimum of fuel, water, and time. They are the last word in design and development for achieving maximum power at the most economical cost. They are expected to take their place properly among the outstanding developments of present day railroad engineering. Early reports of test runs indicate that the highest expectations of their power and adaptability have been more than justified.

All these locomotives have 69-inch drivers and cylinders with 29-inch bore and 34-inch stroke, and will operate at a boiler pressure of 260 pounds at 80 per cent maximum cutoff. The tractive force of the main engine is 91,584 pounds. A type C-2-L booster, mounted on the rear axle of the trailing truck, will increase the tractive force 15,000 pounds, making the total 106,584 pounds. By virtue of the large diameter driving wheels and long stroke, maximum permissible running speeds can be maintained with a minimum wear in the running gear.

The Baker valve gear is of the long-travel type and the piston valves are 14 inches in diameter. Reversing is effective by means of a precision-type "F" reverse gear.

General efficiency of the boiler is increased by the application of Worthington type "S" feedwater heater of 12,000-gallons-per-hour capacity, a type "E" superheater, with multiple-throttle integral, with the header and three thermic syphons in the firebox. Another accessory going to make up this power plant is a modified type "B" Standard stoker, which has its engine carried on the locomotive tender. The grates are of the Firebar type, and are arranged in three sections, with two center frames.

With the exception of the booster, the only auxiliaries using superheated steam are the blower and the generator. The air pumps, stoker and the feedwater heater hot and cold water pumps are all operated with saturated steam.

A single sandbox of 72 cubic feet capacity is situated on the third course of the boiler and is equipped with five single sanders on each side. Sand will be supplied in front of the front, in front and back of the main, in back of the back, and in front of the front trailer wheels.

The boiler is supported in the usual manner at the cylinders, and is attached to the frame crossties by 3/4-inch waist sheets, which are bolted to

One of the First 20 of 48 Freight Locomotives of the 2-10-4 Type, Delivered to the Chesapeake & Ohio by the Lima Locomotive Works. These are Declared to be the Most Powerful Two-Cylinder Engines in the World. Notice the Tandem Main Rod Drive.

cast steel waist sheet ties. To distribute the load over as much of the boiler surface as possible, the wearing liners underneath the waist sheet ties are continued up to the horizontal center line of the boiler. The frame cradle supports the front and rear ends of the firebox by means of sliding furnace bearers bolted to lugs on the mud ring.

The boiler is of the conical type, with three shell courses. The inside diameter of the first course is 97 15/16 inches, and the outside diameter of the third course is 108 inches. The shell courses are nickel steel, with welt strips for the seams made of the same material. There are 59 2¼-inch tubes and 275 3½-inch flues, and the distance over tube sheets is 21 feet. The dome is situated on the first course, a short distance back of the front flue sheet. Carbon steel plate, ⅝ inch thick, is used in the smokebox. Recesses have been built into the smokebox, to permit an application of the feedwater heater and its connections free from the smokebox gases. After all the piping is applied, these recesses are neatly covered with plate, giving the front end a smooth appearance.

Firing rates at maximum horsepower are kept within an economical range by the extremely large firebox, which has inside dimensions at the mud ring of 162 inches by 108¼ inches, providing a grate area of 121.7 square feet, and a combustion chamber 66 inches long. Firebox heating surface is further increased by the application of three firebox syphons. There is a part installation of Alco flexible staybolts in the firebox and a complete installation of flexible bolts in the combustion chamber.

Frames of nickel cast steel, thoroughly braced with cast steel crossties, provide a substantial chassis for carrying the power plant. A Commonwealth frame cradle is bolted to the frames in the usual manner. The cylinders are made of cast steel, and have been designed with special care to obtain free and unrestricted steam flow. Two 8½-inch cross compound air pumps are situated ahead of the cylinders, and are supported on brackets cast integral with the front deck casting. Westinghouse and the New York Air Brake Co. have supplied the brake equipment.

The Pennsylvania type of crosshead and guide, with Brewster crosshead wrist pin has been applied, the guide being secured to the back cylinder head by the Alco "Slid-guide" arrangement. Two feeds from the mechanical lubricator to each guide amply meet lubrication requirements.

The main rods are of the Franklin tandem type, and main and side rods are equipped with floating bronze bushings. A feature of the rod application consists in having the rod-bearing fit of the crank pins on the right side of the engine ⅛ inch larger in diameter than that on the left side. This makes it possible to rebore bearings which have been used on the left side and re-apply them on the right side, thus prolonging the life of the bearings.

Since these locomotives are required to pass over a 17-degree curve, it was found necessary to apply Franklin lateral motion boxes on the front and back driving axles. These boxes permit lateral movement of ¾ inch toward each side. The journals on the driving axle have been turned ⅛ inch larger in diameter on the right than on the left side of the engine, permitting the worn left-hand journal bearings to be rebored and used on the right-hand side. The nominal size of the main driving journal is 13½ inches by 14 inches. Others are 12 inches by 14 inches.

The total weight of the engine in working order is 566,000 pounds, of which 61,000 pounds is carried on the engine truck, 373,000 pounds on drivers and 66,000 pounds on each trailer axle. The weight of the tender, fully loaded, is 415,000 pounds, making the total weight of the locomotive 981,000 pounds.

A Commonwealth outside bearing type engine truck, with 30 per cent initial and 25 per cent constant resistance, is mounted on 7-inch by 14-inch journals and 33-inch diameter wheels. The Delta four wheel trailing truck has 36-inch diameter wheels and 7 by 14-inch journals on the front axle and 43-inch wheels and 9 by 14-inch journals on the rear axle. Engine trucks on two of the locomotives are equipped with Timken roller bearings, for test purposes.

In designing the cab care was taken to obtain a cab of ample size and also to provide the most accessible arrangement of cab fittings for the enginemen. The results more than justify the care taken, as an inspection of this cab will indicate. There are seats provided on the left side for the fireman and head brakeman and, in addition to the engineer's seat on the right side, there is a drop seat for an extra brakeman. There is an abundance of head room in these cabs, and all gauges are easily visible. The backhead has been made unusually free from congestion by running the majority of the pipes underneath the jacket.

A Nathan 24-pint mechanical lubricator supplies the cylinders, steam chest, guides, engine trucks, air pump and feedwater heater hot water pump. The driving journals are lubricated by Franklin spreader type grease cellars. A hydro-static lubricator in the cab supplies the booster and the stoker. The rod bearings are lubricated by grease. Alemite lubrication is provided for all other parts, including valve motion, spring rigging and driving box shoe and wedge faces.

In designing the tender, the modern tendency to large capacity has been adopted. The tanks for these locomotives are of the rectangular type, with cast steel water bottom

frames, and are mounted on two six wheel Commonwealth trucks with 36-inch wheels and 7 by 14-inch journals. A capacity of 23,500 gallons of water and 30 tons of coal assures a minimum number of stops.

The latest reports, received after the foregoing description had been approved, show that the new equipment being delivered to the Chesapeake & Ohio Railway is finding an important reflection in its income account. Expenditures on maintenance of equipment are being reduced, as new equipment is substituted for old.

In the first eight months this year maintenance of equipment expenses on the Chesapeake & Ohio totaled $18,898,742, which was $2,713,888 below the corresponding period last year. The proportion of gross revenues spent on equipment maintenance was 20.7 per cent this year, against 21.9 per cent in 1929. For August alone, equipment maintenance expenses were reduced $727,081 below a year ago. For the year as a whole the management aims at a reduction in expenditures on maintenance of equipment aggregating $5,000,000. The new Limas already put into service have enabled the road to reduce running time, to increase the number of cars in a train to a maximum of 140 from 120, and to reduce the fuel consumption materially.

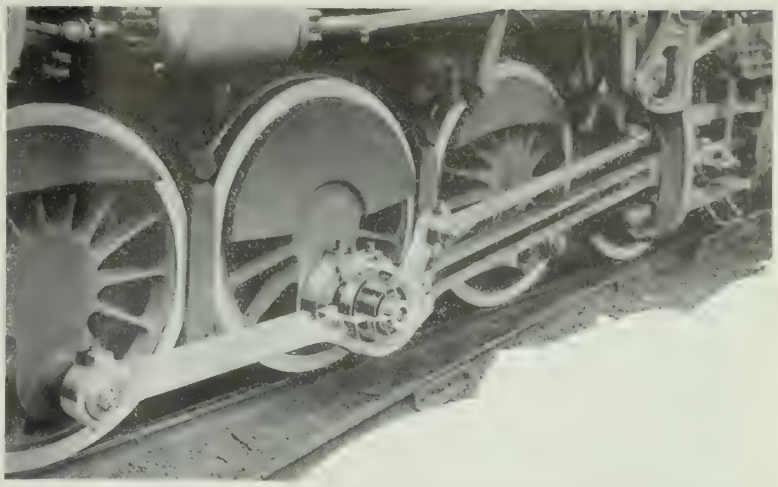
We Hope So

B. C. Forbes, nationally known financial editor in New York, predicts that in 1930 railway earnings will be higher. But he doesn't say a word about taxes, wage demands or the net return.

Confiscation

When, however, we use the unlimited resources of the government to provide capital to compete with legitimate industry, and when, through a process of governmental regulation we indulge in the gradual but sure process of confiscation through indirect action, the public accepts the same with a complaisant mind, notwithstanding the fact that this latter process is as clearly confiscation as any that might be indulged in through direct action.

When, for instance, the government of the United States, through the use of the taxpayers' money, provides facilities to afford free storage of commodities moving in water transportation, and thereby interferes with the business of legitimate capital invested in storage houses along the shores of the Mississippi River, it is confiscating property as surely as if, arbitrarily and through the exercise of police power, it had padlocked the doors of private warehouses or placed police officers within such buildings to prohibit customers from using the private facilities.—*F. W. Sargent, C. & N. W. to American Bankers.*



Here It is. The Extension of the Main Rod Transmits Force Directly to the Rear Driver or Drivers.

Did George Get Any Dividends?

Records of the Chesapeake & Ohio Railway, at Richmond, reveal that George Washington was a stockholder of one of the road's predecessor companies, the James River Co. An act passed by the general assembly of Virginia directed the commonwealth's treasurer to subscribe for 100 shares in that company in the name of George Washington, Esq., in recognition of his "unexampled merits" towards his country. By his will the James River Co. shares were to be used to assist in establishing a seminary. Thus the stock eventually was owned by Liberty Hall Academy, in Rockbridge, Va., which later became Washington College, in Lexington, Va., and finally Washington and Lee University.

Empire State Express 40th Year

The Empire State Express, which Charles H. Hogan drove at the rate of 112.5 miles an hour for one mile in 1893, began its fortieth year of service October 27. Counting runs in both directions between New York and Buffalo, it has traveled 10,748,000 miles or 45 times the distance from the earth to the moon.

The express was named by H. Walter Webb, then vice president of the road, when it was put in service in 1891. Of corporate officers and directors of the New York Central then in service, one survives. He is Frederick W. Vanderbilt, a director who joined the board in 1877 and who has been a member of the executive and finance committees.

Of the first train and engine crews, three men survive. Mr. Hogan, who ran the first train on the opening day from Syracuse to Buffalo, is manager of the department of shop labor at Buffalo. D. W. Fowler, brakeman on the first trip, is a conductor on through trains between New York and Buffalo. Victor Block, porter on the solitary Wagner parlor car used on the first trip, was in service until a few months ago and is now retired.

Crowds assembled at the stations to see the Empire State Express make its first trip. It consisted of a combination baggage-buffet car, two day coaches, the Wagner car and Mr. Webb's business car. Including the engine, it weighed 278 tons. A sixteen-car train today, including a Hudson-type locomotive, weighs about 1,530 tons. The express now carries more than 300,000 passengers a year. It still covers the 438 miles to Buffalo in the best speed for the distance.

The Empire State Express was the first train of which a moving picture was made. William Kennedy and Laurie Dixon filmed the train for the American Mutoscope and Biograph Company in 1896 and the picture was first shown in Hammerstein's Theater.

Many persons are very pleasant while they can have their own way.

New Zeppelin Type German 60-Foot Car for 40 Passengers, Recently Made 180 Miles An Hour, Propelled by An Airplane Engine at the Rear

In the Midst of Life

By W. W. Wood

IN THE handling of passengers the railroads have risen to such a high degree of safety that for years accident insurance companies have been offering double indemnity to such of their clients as may be hurt while riding on trains and one casualty company, I understand, has a standing offer of 10,000 to one that you will not be killed while so riding in any 24 hours. That you may not feel a hesitancy of taking advantage of this apparently liberal offer, statistics prove that the chances are about 22,000,000 to one that you will not be killed if you ride the 40 miles of average travel and 870,000 to one if you take a journey of 1,000 miles, so the casualty company has a very comfortable margin of safety.

Recently it was revealed in the publication, "Railroad Data," under a caption in large print, that "31,500 Died in Automobile Accidents in 1929." This is an increase of 13 per cent over 1928, and is equivalent to the death of one person in automobile accidents every 17 minutes last year. In the previous year it was about one every 19 minutes. Estimates based on first half of 1930 show one death in every 14.5 minutes. Consequently, the situation is getting worse. When measured in comparison with the casualties in the World War, automobile accidents last year alone took a toll of life equal to 40 per cent of all the casualties to American participants in that conflict.

I was greatly impressed with the remarks of R. P. Lamont, secretary of commerce, in a radio address some months ago. He said, "Safety is a serious national problem, primarily because our people generally are not fully aware of the increasing hazards of life and the alarming facts that confront us."

Taking everything into consideration he pointed out that there were 10,000,000 accidents every year in the United States, fatal, serious, or otherwise; that fatal accidents alone run close to 95,000. Consequently, the 31,500 who were killed in automobile accidents last year is about 33 per cent of this total of all fatal accidents. Considering accidents from all causes, he revealed that one person out of every twelve is injured or killed every year.

Let us consider for a moment the relation of these automobile fatalities to persons killed in train accidents. In the ten years 1920 to 1929, inclusive, on all railroads in the United States, 579 passengers were killed. Having in mind that there are more persons injured than killed in railroad accidents, if we take the total number of passenger casualties on all railroads in the United States in the ten years to which I have referred, we have 22,854. Looking at it in another way, the 31,500 killed in automobile accidents in 1929 is nearly 9,000 greater than the total number of railroad passenger casualties in the ten years I have mentioned, or the number of persons killed in automobile accidents in one year is 39 per cent greater than the number of railroad passenger casualties in ten years. During this period passenger trains ran five billion 600 million miles, and the railroads carried nine billion 300 million passengers a total distance of 361 billion passenger miles.

In looking at the number of casualties at grade crossings on all railroads in the United States for the 11 years 1919 to 1929, inclusive, in automobiles alone 23,628 people were killed, while during last year alone in all accidents to automobiles, I repeat, 31,500 were killed. Take the figures for 1929 covering persons killed in automobile accidents: At grade crossings 2,085 were killed as against 31,500 killed in all automobile accidents, or only about seven per cent of the total were killed in automobile accidents at grade crossings.

It would, therefore, seem that the railroad grade crossing, about which we hear so much, is not the place to look for the correction of this trouble; yet, hardly an accident occurs at a grade crossing that there is not a great clamor from every direction, demanding the removal of the crossing, utterly disregarding the factor that should really have consideration, and that is, what is being done to insure a better supervision and control over those who are permitted to operate motor-driven vehicles. Typical of this particular point is an accident I have in mind that occurred last winter at a grade crossing where the motorist, in a snow storm, was driving at such a furious rate of speed that the motor car skidded onto the tracks, colliding with the train, and in the mixup the crossing watchman who tried to stop the driver was killed while performing his duty. Immediately there appeared in a local paper a "bulletin" urging that a bond issue be placed before the voters at the next general election for the elimination of the hazardous grade crossing, wholly disregarding the fundamental cause.

Comparing 1922 with 1929, there was an increase in the total motor cars registered in the United States of 116 per cent; the fatalities increased 136 per cent. It would seem from these figures that experience does not improve the situation.

Mr. Wood is superintendent of safety and welfare for the Baltimore & Ohio Railroad. This is part of an address he made October 1 at Pittsburgh before the National Safety Council.

Railroads Scarce in Morocco

Buses, Trucks and Airplanes Popular

By Eleanor Hoffman

Within the Walls of Old Fez no Automobiles are Allowed, Only Mules and Burros.

FROM the days of Rome until 1912, when France took over Morocco as a protectorate, there has been little change in methods of transportation in that corner of Africa. Morocco has practically skipped the era of railroads. Her neighbor, Algeria, came under French control a hundred years ago about the time when the first commercial railroad came into being, consequently a normal network of railroads covers her territory between the Sahara and the Mediterranean.

But Morocco entered the civilized world in the day of the automobile and the airplane. The tourist rarely uses the few railroads that exist. He may take the train from Tangier, south to Marrakech at the foot of the Atlas, but he certainly will not go from west to east by rail since half way across the country it changes from broad to narrow gauge. The trains move with incredible slowness, and for the most part carry freight. A few spurs run up into the Middle Atlas to bring out phosphates, but even most of that traffic comes down in trucks or on the backs of camels and mules.

Morocco is in daily connection with France by air. Planes leave Toulouse in southern France, fly down the Spanish coast, touching at Barcelona and Alicante, then across the Straits of Gibraltar, touch at Morocco's capital, Rabat, and then at Casablanca, her commercial capital. From there they continue down the coast to Dakar, in French Equatorial Africa, and cross to South America.

Owners of private planes must report to the resident-general who indicates over what areas they may fly. A strict division exists between subdued territory known respectively as Zone of Security and Zone of Insecurity. To penetrate the unsubdued region by land or air without military permission is punishable for Americans by American law. Extra-territorial rights exist in Morocco and the American consul sits in judgement over his compatriots.

The American Export Line, running directly from New York to Casablanca, has as its chief cargo for that port American cars and buses. General Motors has, or had last fall—things change there as rapidly as in California—a more magnificent showroom than that of the Citroen Company. This condition undoubtedly will remain unchanged until France makes six-cylinder cars as cheap as the Chevrolet, or until Morocco changes her tariff system. At present all goods entering the country pay the same 14 per cent duty. The advantage of the French car is of course its low consumption of gasoline while the advantage of the American car lies in its high swung body and greater power. General Motors agencies are scattered not only throughout the four "imperial cities" which sultans have chosen as their residencies, but also throughout the smaller towns.

French and Arab mechanics feel abused if they cannot smoke during their work. A new car that I had

In the Roadway Outside the Walls of Marrakech.

been driving for four days went up in flames along with 20 others because an Arab threw a lighted cigarette into a pool of gasoline under a bus. Thanks to an efficient insurance company, I started out with a new car two days later. When I got into Germany and Austria I noticed with interest that every garage had smoking forbidden by order of the police.

The traveler through this country who cannot afford to bring his own car or buy one has a wide variety of buses to choose from. Even more expensive than a small car of his own, are the luxurious motor tours of the French Line which puts up passengers at its own equally luxurious hotels. There is no conflict with the railroads since they are in government hands, and government funds subsidize the French Line. The principal purpose in Paris is to open up the country as rapidly as possible, and transport travelers with the same comforts they find in Europe.

Next in rank to the French Line buses are innumerable others seating about 40 persons comfortably, but usually crammed with twice the number of Arabs. French and foreigners get the seats in front, on either side of the chauffeur, even if it means dislodging an angry native who got there first. The chauffeur is French. These big buses tear along at about 80 kilometers an hour, and stop only at the larger towns. They move faster than any of the trains and carry the mail. Next in rank come native-owned and native-driven buses, half the size of the others and seemingly twice as full of Arabs. Like all Orientals, Arabs move back and forth between their villages for the sake of the ride. Of course many of them bring rugs woven by their wives in the mountains and desert to sell in the cities. The terminal of the buses in Casa is surrounded by high piles of gaudy rugs with their owners squatting on the sidewalks.

I drove once in the most humble of these buses from Marrakech, the capital of the South, up into the High Atlas. Painted across the windshield was the statement that the bus belonged to Muhammed Ben Abdallah. I squeezed myself in between the Arab driver and another Arab. Not only was I the only European but also the only woman among the passengers. The driver spoke no French and my little Arabic went only far enough to find that he despised French cars and preferred Chevrolets like the decrepit one he was driving. His horn dangled by a bit of string to the side. When we reached the Atlas, the road twisted and turned and rose in midair like the California Ridge Route. One reads so often of buses driven by natives found wrong side up along the highways that I was relieved when he got me safely to my destination.

Morocco has no speed laws. For the most part her roads are excellent. Across the rolling coastal plain they run straight as a ruler, and in the mountains they exhibit the highest skill in engineering. These roads were not primarily laid out for the comfort of tourists but for the rapid and efficient transporting of troops, either native troops northward to help France or French troops going southward to quell native uprisings. Here as nowhere else camions or trucks have supplanted the railroad as an aid to military maneuvers. The big buses hold the middle of the highways. Everything else makes way for them, smaller buses, private cars and camel caravans. In Tunisia, caravans cling tenaciously to the middle of the road, and you have to weave slowly in and out between camels, sheep and goats, but in Morocco the caravans usually move along the fields beside the road, and your path is clear.

I have driven a car in many countries both in Europe and Africa, but nowhere have such magnificent signposts guided me as in Morocco. There they consist of a slab of white cement the height of a one-story house, with the name of the next town and its distance in kilometers painted in letters a foot high. Sometimes the whole side of a house is used. The ease by which one can find one's way in the open country is equalled only by the difficulty in moving through the cities.

Here the streets are so narrow, that people have to flatten themselves into the doorways as you pass. In Old Fez they are so narrow that in the whole city there is not one street where a wheeled vehicle is allowed. All merchandise moves in and out on mule back or on the heads of natives. High walls pierced by gates surround these cities. These century-old gates were constructed in such a way that the enemy had to have a right angle turn inside them. Now the motorist has to do the same. The uncontrolled coming and going of unbelievably stupid natives increases this difficulty. One gets in the habit of keeping one's hand continually upon the horn as one drives through gates and native quarters.

Between the cities lie empty stretches of forbidding country. On the long road that runs east and west, south of the Riff mountains, great blockhouses known as bordjis rise at intervals. In one town a bordj which once served the railroad station now surrounds the French Line hotel, while the new station built since the Riff campaign lies inside the walls of a new and well fortified bordj. After driving through this country as lonely and forbidding as the Mojave desert, without a gun or masculine protection, one reaches the friendly Algerian frontier with a feeling of relief.

Morocco is a country worth watching. The growth of Casa has been phenomenal. I do not think the railroads will increase their capacity for passenger traffic; the opening up of mines in the Atlas probably will necessitate the construction of more narrow gauge spurs. But certainly as the country develops, transportation by bus and private car will increase at the same rate of speed since the days before 1912 when nothing but camels padded slowly along the sandy caravan trails.

Motor Cars In North Africa

The motor vehicle is gradually but surely replacing the traditional camel and donkey in North Africa, according to Trade Commissioner H. C. Schuette, in a trade bulletin made public by the commerce department. Good roads are being constructed across the deserts, he points out, and bus lines operate regularly between the principal cities.

From the standpoint of the American exporter, the report shows, Morocco is the most promising market in North Africa, as its import duty of 12½ per cent ad valorem applies equally to all cars, regardless of origin. In the case of Algeria and Tunisia, on the other hand, French automobiles enter free of duty while all other cars must pay a tariff of 45 per cent.

The total value of American automotive products shipped to North Africa in 1929 was about $2,000,000, representing an increase of about 85 per cent over the previous year's figure. Morocco took about three-fourths of these exports, and it is noteworthy that while its passenger car imports increased about 25 per cent in number, the increase in value was 250 per cent. As might be expected the chief competition to American cars comes from the low priced French makes. While these two companies practically dominate the taxicab field at present, it is probable that many of these eventually will be replaced by American makes.

No change is necessary in standard equipment in selling automobiles in Morocco, according to Trade Commissioner Schuette. Bright colors, he declares, are preferred and as Moorish families usually consist of several wives and children, the seven-passenger car is in demand. The question of speed is also an important one, as there are no traffic rules in Morocco. The native likes to drive, if possible, with his throttle wide open.

—Herbert Photo

In Persia, the Uzbeks of Samarkand Find the Modern Motor Bus Competing With the Camels and Getting Most of the Business.

To Abandon First Railway?

Abandonment of the first stretch of railroad built in the United States is planned by the Delaware & Hudson Railroad. The line, running from Racket Brook to Honesdale Junction, Pa., is 24 miles long and was constructed between 1828 and 1829. It is older than the first locomotive.

The petition for abandonment filed with the Interstate Commerce Commission says it has ceased to be profitable.

There are three things necessary for industrial leadership . . . a man must know enough about finance to balance accounts. He must know a lot about mechanical things. Also, he must know enough about human beings to understand their wants, desires and motives.—*Henry Ford.*

An Industry Creating Much Business

By C. W. Heath

The automotive industry, as most of us know, has turned back to the railroads, and still is turning back in freight charges that go a long way toward making up for the passenger traffic its cars have taken. Nothing very new or startling in this, perhaps, but it certainly must be comforting for traffic men to know that this industry, scarcely a generation old, gave the roads about 3,500,000 cars of high class freight in 1929, and that this volume isn't likely soon to be any smaller.

The automotive business has contributed much to other industries also, developing new world markets. for many of the basic raw materials used in all manufacturing and finding new sources of supply for some of its needs. It uses 85 per cent of the production of rubber, 67 per cent of plate glass, 62 per cent of alloy steel, 15 per cent of copper, 18 per cent of lumber and hardwoods. It is directly responsible for the consumption of 80 per cent of the gasoline used or 297,000,000 barrels of 42 gallons each, while the consumption of cotton fabric used in tire production was 287,000,000 pounds. It and its allied industries give employment to 4,700,000 persons. The total number of car and truck dealers was 56,600 at the end of 1929. It used 610,000 pumps to the profit of those engaged in the oil industry, and there were 76,600 supply stores scattered throughout the country.

The increase in production per man hour in the automotive and rubber tire industries for 1929 was 200 per cent over 1914. The industry next in rank made an increase in the same

Believe It or Not, This Tunnel Has Only One Portal.

period of scarcely more than one-third this gain.

More important to mankind than any of the foregoing facts are the energizing effects of a nation riding on rubber. The expansion of highway arteries eliminates rural isolation, lessens city congestion and expands suburbs. Abandoned lands are reclaimed and made productive, new ones are exploited. The motor car has been an important factor in decentralizing our cities. Factories are permitted to locate farther from centers of population and thus be near raw materials and fuel supplies. Branch plants for the production of various parts used are located in small communities near available labor. Workers are enabled to live in comfort in homelike surroundings, giving their families the advantages of outdoor life and natural surroundings.

In 1929 the country received $415,000,000 in taxes on gasoline consumed by motor cars. The total tax on motor vehicles was $952,000,000, more than a billion and a quarter of dollars in taxes or almost seven-tenths of our total expenditures for streets and highways in 1929, and we still have the improvements.

Bond and stock financing by the motor car and accessory companies from 1925 to 1929 inclusive was more than $500,000,000, small indeed compared to growth and magnitude of the industry, which has shown a remarkable ability to provide for its financial needs without resorting to sales of its securities. It has strengthened its position in the industrial world by reinvesting accrued profits. A factor having great potentialities is the practice of contracting with allied factories engaged in other enterprises, for parts, thus acquiring without interest a large amount of needed capital.

One-Entry Tunnel

There is a railroad tunnel at the summit of the Cascade Mountains in southern Oregon on the new Cascade Line of the Southern Pacific that has but one portal. Trains enter this tunnel but they never go through it. Reads queer, but the fact is this unique tunnel is used for the trail track of a wye. It is bored 163 feet into the mountain so that a locomotive and caboose, which equipment legally constitutes a train, can turn around. An engine with snow plow attached, or an engine and flanger can also use the wye.

The railroad at this point skirts the shore of Odell Lake. With the mountain close on the opposite side, there was no area large enough on which to build the wye necessary to turn the helper engines used on west bound trains. The installation and maintaining of a turntable would have been too expensive, due to the elevation and extreme winter weather in the mountains. The problem was solved by Chief Engineer Geo. W. Boschke in building the tunnel with one portal.

Oldest Locomotive in Active Service

Locomotive builders believe the oldest passenger locomotive still in active service is operated in England. It is the "Ryde," built back in 1864, for the Isle of Wight Railway, on which line it still is in daily service on the Breding-Bembridge division. It also does duty in switching passenger coaches. In its 65 years' service this engine has traveled more than one and one-half million miles, and is still giving good service.

All These "The Fastest"

What is declared to be the fastest steam-driven giant on wheels to make its appearance in Canada, the Hudson locomotive 5700, was released from the shops of the Montreal Locomotive Works recently to haul the world's fastest train, the International Limited of the Canadian National Railways from Montreal to Chicago. Five such locomotives are to be delivered to the railway. To keep to schedule the new engine will sometimes have to travel 80 miles an hour. The engine's driving wheels are 80 inches in diameter, the largest in Canada. From end to end the new Hudson is 92 feet five and three-fourths inches long and weighs more than 331 tons. Twenty tons of coal, enough to heat an average house for the entire winter, will be carried and 14,000 imperial gallons of water. The maximum tractive power, without the booster, is 43,300 pounds. With the booster another 10,000 pounds may be added. Beauty has been added to speed and power in the 5700, and for the sake of appearance as well as these other essentials this locomotive has many new features. Trimming up has resulted, for example, in the elimination of the sand dome, and in the concealment of practically all piping, particularly that above the running board. The jacket is of polished steel while the other parts of the locomotive and tender are Ducoed. Handrails are of stainless steel. The bell is set well forward as is the steam whistle.

Close Mountain Gap

Canadian Pacific Railway engineers have completed one of the most difficult pieces of railway construction done in Canada in many years. The new link of that road's south line through the heart of the Rocky Mountains, between Kootenay Landing and Proctor, near Nelson, B. C., closed a gap on the line through southern British Columbia where for more than 30 years connection has been made by steamer and car barge on Kootenay Lake. Whole trains of ore and other products have been transported east and west between rail terminals at great expense, and oftimes with disaster. The new rail link eliminates this hazard.

More than a thousand men have been engaged for many months blasting a way for the steel around the shore of Kootenay Lake. The difficulties have been much greater than the distance of only 30 miles might suggest. Approximately 1,500,000 tons of rock have been blown out, while preparations were made for the construction of five steel bridges and four rock tunnels, the longest of which was 1,044 feet. In the near future Nelson is to have its all-rail connection with the prairie provinces through the Crow's Nest Pass line, and an unbroken ribbon of steel will stretch through southern British Columbia to Vancouver.

"Do not count too heavily on your mental attainments; brains are never a substitute for hard work."—*Thomas A. Edison.*

Grave Effects If Rates Are Cut

The I. C. C. Gets Formal Statement from Western Lines, October 28, Describing a Serious Situation Existing

"IF THE railroads in the western district are to continue to furnish adequate transportation facilities for the people in that section of the United States which they serve, they should not be called upon to absorb any more general rate reductions at this time, or until the returns from operations are in a much more satisfactory condition than at present," the Interstate Commerce Commission was advised Oct. 28 by ten western rail executives on behalf of the Association of Western Railway Executives. The statement says:

To the Interstate Commerce Commission: This statement is submitted on behalf of the Association of Western Railway Executives. Believing that the situation of the western railroads has become sufficiently serious to menace the maintenance of adequate transportation for the future, we conceive it to be our duty to the public and to the properties in our charge to report these facts. Under the Interstate Commerce Act, as amended by the Transportation Act, 1920, the ultimate obligation in respect to the maintenance of an adequate system of transportation by railroad is placed upon the Interstate Commerce Commission, the effect of which has been described by the Supreme Court of the United States as putting "the railroad systems of the country more fully than ever under the fostering guardianship and control of the commission."* Many of the facts herein presented appear in statistical reports filed either pursuant to law or regulations of the commission or are matters of common knowledge. They have not, however, been brought together in the present form so that their combined effect may be fully appreciated. It is not our purpose in presenting this statement to undertake to affect the decision of pending cases, but simply to bring these concrete facts to your attention that they may be given consideration in your administration of the duties which congress has directed the commission to discharge.

In no year since 1920 have the railroads in the western district received earnings which approximate a fair return upon the aggregate value of their properties. During this period there has been a continued reduction in the general level of freight rates, beginning with 1921 when drastic reductions were made in the rates on grains, grain products and hay, and on livestock in our territory, and in 1922, when the freight rates on all other commodities were reduced 10 per cent, all pursuant to decisions of your honorable commission. Since that time there have been numerour other decisions dealing with rates on particular commodities which have resulted in further loss of revenue. There have also, from time to time, been certain readjustments made by the railroads themselves, in the usual course of business, which have, to some extent, affected the general rate level. Some of these were made necessary by the indirect effect of decisions of the commission readjusting other rates.

While it has on occasion been critically asserted that the railroads themselves have contributed to the downward trend of freight rate levels by voluntary reductions in rates, such reductions constitute a small part of the total rate reductions which have taken place since 1920. Such voluntary reductions as have been made have been the result either of managerial judgment as to rates which might be required for the movement of traffic in particular circumstances or they have been the natural result of competition between railroads, the competitive principle of railroads, the competitive principle of railroad operation having been retained and safeguarded by congress in the Transportation Act of 1920 as being in the public interest.

In 1925, the western district carriers undertook, through appropriate proceedings before this commission, to secure an increased freight rate level in their territory. Such increased freight rate level we believed necessary in order that we might more nearly approximate earnings which would be equivalent to the fair return upon the value of railroad property in the aggregate in our district, which fair return congress has recognized as essential to the maintenance for the present and for the future of an adequate system of transportation. Even aside from this recognition, it is axiomatic that adequate earnings are essential to adequate transportation. Our petition for an increase in freight rates was denied in Revenues in Western District, decided July 14, 1926, 113 I. C. C. 3, upon the ground that no financial emergency existed sufficient to warrant a horizontal increase in freight rates throughout the western district.

Since that time we have continued our best efforts to reduce the cost of operation and have been successful in achieving substantial results. This we have done through close supervision, through improvements in methods, such as longer engine runs, fuel economies, reduction in loss and damage claims and a more intensive use of equipment, and through expenditures for improved facilities, including machinery and tools. Some of these results have been attained only through the helpful cooperation of the employes and the shippers. Substantial increases have been brought about in net ton miles per freight train mile and per locomotive mile, net ton miles per train hour, car miles per car day and miles per train hour, all of which have tended toward reduction in operating expenses. Service has been improved and delay resulting from car shortage eliminated. Among the benefits to the public which have resulted from the more expeditious and certain movement of freight has been the reduction in stock which jobbers and merchants are obliged to carry. Meanwhile, we have been required, through arbitration and mediation proceedings under the Railway Labor Act, to increase the wage scales of various classes of employes until today for many classes of employes these wage scales exceed those which were in effect during the federal control and guaranty periods of 1920, which were the highest wages that had been paid up to that time.

During this period, the further development of the automobile bus in our territory, coupled with the increased use of privately-owned automobiles, has resulted in further drastic curtailment of passenger revenue. The automobile truck has likewise diverted an enormous amount of freight traffic from the railroads to the highways and its radius of operation is being constantly extended. These automobiles are using the public highways with little or no contribution to the cost of constructing and maintaining the same, whereas in 1929 Class I carriers in the western district expended for the maintenance of ways and structures $346,483,316 and in addition thereto owned the roadbeds on which they operated, which represented a large property value on which it is essential, under the present system of operation, that they should earn a fair return. The railroads also pay taxes upon this and other of their property, which taxes have been increasing in recent years due in no small measure to public expenditures for highway construction. In other words, the railroads have been required to pay in part for the facilities used by competitive forms of transportation.

In addition to this, new construction of pipelines throughout large sections of the western district for natural gas is already making important inroads upon the revenue from coal traffic of western district carriers and gives promise in

*Chief Justice Taft in Dayton-Goose Creek Ry. Co. vs. United States, 263 U. S. 456, 478.

the future of seriously curtailing the movement of coal and other fuel throughout the territory. Likewise, there are under construction extensive systems of pipelines to transport gasoline which will further reduce both the tonnage and revenue of the railroads. This pipeline construction for natural gas and gasoline constitutes a most serious present and future menace to railroad revenue. Its adverse effect upon highly important revenue producing traffic is apparent, for in 1929 western district Class I railroads received $317,213,226 for the transportation of coal and petroleum and its products.

During the same period, there has been a further development of inland waterways, and the operation of government barge lines which has resulted in a serious diversion of an increasingly large volume of freight traffic from the steam railroads to the waterways. This waterway competition, like the use of the public highways by the automobile bus and truck in transportation service competitive with the railroads, is being carried on in part at the expense of the federal and state governments, so that a substantial portion of the cost of such competitive cost is in effect being borne by the general public as contrasted with shippers and receivers of freight. Included in this general public which is being taxed to support, in part, this water competition are the railroads. The difficulties which the railroads in the western district encounter in meeting this competition and undertaking to maintain their traffic and revenues are obvious.

The diversion of freight traffic to the automobile truck has proceeded already to a point where a substantial portion of the short haul freight traffic has been lost by the rail carriers. Coincident with this, there has been a marked tendency on the part of regulatory authority to require reductions in freight rates for the longer hauls with the result that, in many instances, the rail carrier is being required not only to witness a diversion of short haul traffic to the highway, but coincidentally to receive reduced revenues on the long haul traffic which is still transported by railroad.

The facts which we have heretofore stated have no direct relation to the present depression in business in the United States. Their adverse effect upon the railroads in the western district has necessarily been emphasized by the condition which has confronted the country during the current year. A revival of the trade and commerce of the country would not, however, in and of itself solve the problems incident to the maintenance of adequate transportation by railroad for the future in the western district.

Shortly before the beginning of the current year, the railroads in our district, with other railroads in the United States, were requested by high public authority to undertake, in so far as it was possible to do so, such constructive programs of capital expenditures as would, in the public interest, assist in alleviating the depressed condition of industry and in overcoming threatened unemployment. In response to this request, we laid out specific programs of capital expenditures in an effort to achieve the desired result, which programs have been carried out in so far as possible. More recently, during the period in which the drought conditions adversely affected portions of the country, with a consequent untoward effect on business, we were asked to reduce rates for the movement of live stock from the drought-stricken areas and of hay, water and feed into such areas, and we have undertaken to provide reduced rates for this purpose, generally 33 1/3 per cent below the regular rates, resulting in a further diminution of revenue during the period in which these emergency rates remain in effect.

We direct attention to these considerations of national concern for the reason that we believe it to be in the public interest that the railroads should be so situated as to be able to cooperate in times of need.

Without undertaking to make any predictions as to the future on this score, we submit that any general rate reductions, or, in fact, any material reductions of rates on commodities which constitute a substantial portion of the tonnage of the western railroads, would menace our already insufficient revenue to a point where grave consequences may ensue.

Even prior to the drastic decline in the volume of business, the railroads in the western district as a whole were not able to pay dividends to their stockholders in keeping with the risk attendant upon investment in this character of securities. In this and other respects, the railroads of the western district were in a much more unfavorable condition, in comparison with railroads in other sections, than existed in the period prior to the World War. We submit to you that if the railroads in the western district are to continue to furnish adequate transportation facilities for the people in that section of the United States which they serve, they should not be called upon to absorb any more general rate reductions at this time, or until the returns from operation are in a much more satisfactory condition than at present.

After describing general adverse conditions in great detail the executives' statement continues:

We are submitting for your consideration some of the outstanding facts of the present situation. Among these are:

1. Present income of the western district railroads has become insufficient to insure the maintenance of adequate transportation for the future.

2. Carriers in the western district as a whole cannot expect to continue constructive programs of capital expenditures in the face of further diminution of their inadequate revenue.

3. In no year since 1920 have carriers in the western district as a whole been in receipt of earnings equivalent to a fair return upon the value of their property.

4. The decline in passenger travel by railroads continues to reduce income of these railroads to a disturbing degree.

5. Forms of competitive and, to a large extent, unregulated transportation which have been and are being developed, some by government aid, have prevented the normal growth of freight traffic on the railroads.

6. The great decline in car loadings of freight in the western district continues and there is no immediate promise of its restoration to a normal level.

7. Freight rate levels in the western district, when measured by any standard, fail to reflect the increase in operating costs compared to the prewar level to the same extent as in the remainder of the United States.

8. Before the war, railroads in the western district were able to pay to their stockholders dividends, although modest, in a greater ratio to their capital stock than in the remainder of the United States. This situation has been completely reversed.

9. Railroad net operating income in the western district has been so depleted during the present year that, for the first six months thereof, it is less than the interest accruals upon the funded debt, with no margin for either dividends or surplus.

10. The curtailment of expenditures for maintenance of ways and structures and equipment, which has been necessary in the face of reduced income, has proceeded to a point where the necessity for further action along this line cannot be viewed as in the public interest.

11. Even with a restoration of general business conditions and traffic volume to a more nearly normal level, it will take the western railroads a considerable period to solve the problems which the present situation has forced upon them, even if more disastrous consequences of the present situation are to be avoided.

The statement shows that the net railway operating income for the first six months of 1930 was $113,760,610. This is less than one-half the annual interest charges on funded and unfunded debt of western district carriers in 1928, the last year for which data are available. Such interest charges were $266,815,224. (I.C.C. Statistics, Statement No. 24.)

In the two later months of July and August, for which certain data is now available, the net railway operating income has continued to be radically below that of the same months in the two preceding years, as follows:

Net railway operating income—western district, July and August:

1928	$ 95,028,103
1929	114,161,588
1930	83,846,587

The statement was signed by the following railroad presidents: L. W. Baldwin, of the Missouri Pacific; Charles Donnelly, of the Northern Pacific; L. A. Downs, of the Illinois Central; J. E. Gorman, of the Chicago, Rock Island & Pacific; Carl R. Gray, of the Union Pacific; A. D. McDonald (vice chairman of the executive committee of the Southern Pacific); Fred W. Sargent, of the Chicago & North Western; H. A. Scandrett, of the Chicago, Milwaukee, St. Paul & Pacific; W. B. Storey, of the Atchison, Topeka & Santa Fe; and F. E. Williamson, of the Chicago, Burlington & Quincy.

Editorial Comment

Deferred Maintenance and Economic Loss

TO OLD RAILROAD MEN deferred mainteance, spells just one thing, economic loss. Today when the hue and cry comes from every quarter for assistance in relieving unemployment the railroads should use every means possible to avoid reducing maintenance forces. Industrial corporations, if they suffer a loss in business, do not reduce their plant and equipment maintenance except in proportion to the loss in volume of business.

Many large organizations, during periods of depression, have employed their forces in making extensive improvements to plants so as to be in better position to handle more economically the large volume of business which usually follows all slack periods. For the railroads to reduce maintenance by a higher per cent than the actual gross loss in traffic, in order to make a better temporary showing in the net return, is neither good business policy, good economics nor fair to the men forced out of employment at a time when the country's economic condition requires that they be kept busy.

It is well to remember, however obvious the old saying may be, that no one man can cooperate by himself. It is equally true that loyalty never can be a one-sided affair; at least it never should be. Employers also must contribute something.

Buy Now

Cheap money and low prices make this an effective time to purchase railroad equipment. While figures prepared by the American Railway Association show large surpluses of cars and locomotives available for service, it must be remembered that much of this equipment is economically obsolete. Mr. Houston, president of the Baldwin Locomotive Works, in a recent address said,

"If the present rate of replacement continues, that is, if by 1940 only 25,000 locomotives have been put into the inventory since 1920, and say 30,000 to 35,000 locomotives then in use are more than 20 years old, the operating economy of the then existing inventory will be so far below the best obtainable from the motive power of the last ten years input, that the holders of it will be at a great disadvantage in competition with the railroad which has got rid of its old equipment."

At present money is available at such a low rate for financing, and prices are at such a low point that railroads making purchases now are not only assured of having equipment at a lower capital expenditure, when traffic increases and it is needed, but also will be in a position to show greater operating economies which will more than prove the wisdom of the expenditures.

Purchasing equipment at this time will have a decided effect also on the present depression, which in turn will affect the railroads more quickly than any other line of industry. For example, it is said that the steel producer requires about six tons of raw material to produce a ton of steel. Therefore, seven tons of traffic would be produced for every ton of steel used in equipment building. During the past month there has been considerable improvement in the equipment market. Such roads as the B & O, the Santa Fe, the Norfolk & Western and the Pennsylvania, are to be commended for coming out with equipment orders involving more than 16 million dollars which will afford employment during the winter to thousands of men.

It is interesting to note that every period of depression in this country has been broken when the railroads started to buy. If the railroads at this time came into the market for their actual requirements to bring their stocks of material on hand, which are badly depleted, up to normal, released their rail and track requirements for next year, and purchased 20,000 cars and three hundred or more locomotives, the backbone of the present economic depression would be broken. Other large industries would enter the market for requirements, fearing advancing prices, and the whole volume would bring a stability to employment and a confidence to the public which would result in a general buying movement of all the necessities and many of the luxuries.

What we need now is a leader, and the railroads, as in the past, should be the bell-cow to lead us to a new peak of industrial prosperity.

The Inevitable Day

The faithful courier of facts and figures, *Railroad Data,* has sent us, recently, some extremely interesting excerpts from an address by Fred W. Sargent, president of the Chicago & North Western Railway, before the American Bankers' Association convention. Mr. Sargent is talking about bonds and confiscation, unpleasant but very important subjects right now.

In the same mail bringing Mr. Sargent's address came a three-page statement quoting Moody's Investors' Service, but not signed by that company, discussing the status of certain railroad bonds.

Mr. Sargent told the American bankers that the total amount of railroad bonds of all classes outstanding in the hands of the public amounts to 12 or 13 billion dollars. Many of these bonds, he said, are owned by trust companies and banks, including savings banks. At present their future is affected seriously by depressed and depleted earnings of the railroads. In the face of this situation, Mr. Sargent said, there is no sign of any check in the process of rate reductions, while competitive forms of transportation continue to be developed.

Turn now, for a moment, to the statement quoted as coming from Moody's bureau: The bonds of *eleven* out of 36 Class 1 roads, it says, are in danger of losing their status as legal issues for the investment of New York state savings banks unless the present law is amended. Declining net operating income may remove these bonds, automatically, from the class now approved by the state banking law.

This, we believe, creates a very serious situation. Under the banking laws of New York state mortgage

bonds, if they are to qualify as legal investments for savings banks, must be the obligations of companies that "in each year for at least five of the six fiscal years, and in the last fiscal year next preceding such investment" earned an amount available for fixed charges "not less than one and one-half times such fixed charges." Should a railroad company fail to earn its fixed charges one and one-half times, its bonds are removed arbitrarily from the legal list at the termination of the year. Moody's Service is quoted as saying the bonds of only a few companies fell into such a category on the basis of earnings for the first six months, but that "as a result of large declines in net railway operating income in July and August, and also indicated for September and October, the list of these unfavorable possibilities has grown."

It may be a depressing thought, but it does begin to look as if the Inevitable Day had arrived when something must be done. No matter how many extensions you have had or how much compound interest you have paid, the day always comes when the banker looks the other way when you talk about hard times. The old farm will stand just so many mortgages and no more. When the crops produced fail to sell for enough to pay the interest, and a little something on the principal, you may expect to see new faces in the old home pretty soon.

Instead of the farm let us substitute the railroads. Their earnings, which are the railroads' crops, have been poor throughout the year. Their net return, now referred to as the comedy-relief of this tragedy, has been about 3.59 per cent on their investment in property used in transportation. This is less than they have to pay for the money represented by the bonds or mortgages for 12 or 13 billion dollars. And at this point, without any more technicalities, we take up one more situation:

Executives of western lines submitted a statement to the Interstate Commerce Commission October 28 which declares a situation exists "sufficiently serious to menace the maintenance of adequate transportation for the future."

It is not easy to imagine a statement more serious coming from the executives of these western lines. But figures and facts justify such language. In the first eight months this year *eleven* of these lines were operated at a loss. Six eastern lines and two in the South were in the same condition, 19 in all.

Why, with the highest degree of efficiency ever known in the railroad business, are these roads in such condition? We are not going to burden this editorial with the figures for the year or for other years; they are available to anyone; but we are going to answer that question, and very briefly, as we see it.

It is no coincidence that Moody's Investors' Service mentions the bonds of *eleven* Class 1 roads as being likely to lose their legal status as investments for savings banks in New York state, the world's financial center. Doubtless these eleven roads are the ones reported as operating as a loss for eight months.

Why is the net return for that period down to 3.59 for eight months—and much lower than that for certain months? Because the rates the roads are permitted to charge are not, and have not for several years been high enough to permit the properties to yield a higher return. Why not? Because the Interstate Commerce Commission has persistently neglected to enforce the very plain mandate of the Transportation Act of 1920, requiring it to approve rates high enough to insure a "fair return."

Why has the commission failed in this duty?

Does not the commission know that its failure to protect the nation's transportation machine has created a situation very likely to result in government ownership?

The Interstate Commerce Commission is an extremely overburdened and much-harassed arm of the federal government. Even with the enormous organization under its direction it is far behind in its work. After ten years it produced a plan of consolidation of railroads, required by the Transportation Act, acceptable to no one outside the commission. Its administration of the so-called Valuation Act, (Amendment 19) has cost the people and the railroads many millions of dollars, has been disapproved by the United States Supreme Court, and is worthless today. Finally, to go no farther into the disappointing record, the commission is the slowest of all slow government bodies. Charged with the regulation of the country's railroads, it is itself the outstanding example of an organization most in need of regulation. Put with this opinion the fact that the commission is expected to do more highly technical work than any such body could accomplish within a reasonable time, and we are confronted by the natural question, What is to be done about it?

Obviously, the way out is to relieve the commission of some of its onerous duties. And how may this be done? With the utmost friendliness, it is suggested that the President appoint one more fact-finding commission. It seems fair to assume that a proper inquiry might develop the urgent need of repealing many objectionable and entirely unnecessary laws, and at least one resolution attributed to Mr. Hoch and Mr. Smith, the nation's outstanding example of Soviet economics, so bad that even the Supreme Court frowned upon it.

What about this proposed fact-finding commission? Such a body might be composed of the chairman of the Interstate Commerce Commission, Mr. McManamy, a trained railroad man with a good supply of common sense; the chairmen of the committees on interstate and foreign commerce in both houses of congress; the general counsel for the Association of Railway Executives, Colonel Thom, and possibly the chairman or president of the national associations of state public utilities commissions as direct representatives of the people.

These gentlemen certainly ought to turn up some interesting and important facts for Mr. Hoover. Indeed the possibilities are overwhelming. The people ought to know just how much of their money, paid in taxes, is being spent ineffectively. They ought to know just what is the commission's attitude toward government ownership of railroads—not the attitude of one member, but of all—because it is quite apparent that if the entire body favored that undesirable consummation it could have done little more to bring it about than it has done in its administration of the Transportation Act.

One more fact might be developed: If something constructive is not done at Washington, especially for these western lines, and done pretty quickly, too, government ownership or control is just what the roads and the people are facing. It must be apparent to fair-minded persons that the railroads can not

long contend with overwhelming competition, part of it subsidized by the government itself on our rivers; they can not maintain adequate transportation on declining rates, and pay interest on bonded indebtedness—on 3.59 or less as a net return. Not if the roads are to outrun the sheriff. It can not be done.

We Have Much To Be Thankful For

The prepositional ending of this headline is excused with the explanation that it is taken from a most encouraging old song, a song very likely to bring the listener sharply to attention. It is a song intended, when the heart is filled with disappointments and failures, with problems, obstacles, and the inevitable shocks of fortune, to make men remember as they might not otherwise do, the almost innumerable compensations of life for which they ought to be thankful. Let us reason this out.

One of the lamentable weaknesses of men and women is a tendency to magnify the bad things, the discouragements, the imagined injury some one has done them. Men will stay awake at night thinking over the actions they might have taken, the words they might have spoken, the ways in which they might have evaded the crash. To tell such a man in the morning that he is missing the sunshine and the songs of birds, forgetting the blessings of good health, and the affection of those who believe in him and in his ability to achieve things worth while despite all the wreckage of his plans; to tell him these things is not to give him great comfort unless his philosophy of life is made over, renovated, founded upon a new basis of human gratefulness.

Men out of work, carrying a load of debt, uncertain which way to turn, are likely to be cynical in the presence of Thanksgiving Day. But even such as these may find reason for thankfulness and hope if they still have health, because in this land no man and no man's family is allowed to suffer if they have the courage to speak.

And better times *are* coming. We all *know* this. They *must* come. The old assurance, however trite, that the sun really is shining somewhere has genuine value. In this instance, when business everywhere seems to stagger, we still can remember that in the ordinary course of nature improvement must come. The world must be fed and clothed. Trains must run, or at least some of them; automobiles must continue to be operated; airplanes will go on flying, and all these things need the goods that men and women make.

Then, too, if you count up at night all the bad things of the day, and set against them the good things, the pleasant items, you are certain to be astonished when you discover the balance nearly always favors the better side.

Even the farmers have much reason for gratefulness. They, at least, are not out of work.

The Aristocrats of Labor

Employes on American railroads, by which, of course, we mean to include those in Canada, ought to be glad they live and labor on this continent when they read the latest official news from England about wage schedules of men doing similar work. The head of the National Union of Railwaymen, acting on the instructions of the general meeting to draft proposals for a program particularly designed to benefit the lower-paid grades and shopmen, has decided that the policy of the union shall be: (1) Minimum wage of £2:10s ($12.17) a week for all adult employes, with the consolidation of the existing war wage of railway shopworkers. (2) Guaranteed week for railway shopworkers. (3) One week's holiday with pay for railway shopworkers. (4) All employes to be brought within the scope of the agreed national and local machinery. A general special meeting of delegates was called to gather in London late in October to consider the proposals.

A Champion of Justice

In the Chicago Tribune of October 31 appeared a portrait of Joseph W. Fifer, former governor of Illinois who celebrated his 90th birthday anniversary the previous day. Ordinarily such an event is particularly of local interest, but the story of Governor Fifer's long and useful career contains a chapter which we wish to commend to the attention of the Interstate Commerce Commission.

From 1899 to Dec. 31, 1905, when he resigned, Governor Fifer was a member of the commission. As frequently happens when fresh intelligence is applied to the problems of the commission, he rendered a very intelligent verdict with respect to the long and short haul clause of the then existing Interstate Commerce Law. We forget the exact case, but it had something to do with hay in the territory north of the Ohio River; and if his policy had been maintained, the extended discussions and controversies about the long and short haul clause probably would not have taken place and railroad men might be happier than they are.

The extraordinary thing is that the small population of the intermountain states, even with the vociferous oratory of their representatives in congress, have been sufficient to put into the law restrictive regulations which are contrary to every known theory of transportation, and contrary to the practices in every country but ours.

Consider the situation: The states interested in a free and sensible interpretation of the long and short haul clause are, in part, as follows, with their population:

California	5,672,009
Oregon	952,691
Washington	1,561,967
Illinois	7,607,684
Indiana	3,225,600
Michigan	4,842,280
Missouri	3,620,961
Ohio	6,639,837
Wisconsin	2,930,282

The states opposing are, we believe, these:

Arizona	435,833
Colorado	1,035,043
Idaho	445,837
Montana	536,332
Nevada	90,981
New Mexico	427,216
Wyoming	224,597
Utah	502,582

The Constitution of the United States requires for every individual "equal and exact justice." As far west as Chicago freight is shipped to the Atlantic seaboard and transported thence by vessel through the Panama Canal to the Pacific seaboard, while congress, which controls the intercoastal vessels through the so-called navigation laws of the United States and through preferential duties through the

Panama Canal, is permitting the Atlantic seaboard cities to avail themselves of the water transportation, and is refusing to loosen the restrictions which prevent the middle west competing with the Atlantic seaboard in establishing and maintaining relations with the communities on the Pacific Coast.

It is worth noticing that the *increase* in population between 1920 and 1930 in the states first named exceeds the *total* population of the states in the second list yet the last named states, with their smaller population, appear to control the application of the long and short haul clause which proves so oppressive to America's railroads.

World-Wide Railroad Conditions

A survey of the earnings of railroads outside the United States, incomplete as it must be, is startling in its similarity to our own. Foreign Railway News, sent from departments in Washington, report that the receipts of government lines in Japan from April 1 to the end of June, showed a decline of about 20 million yen (about ten million dollars) compared with the same period in 1929. This leads Japanese railway officials to estimate that for the whole fiscal year the income will be fully 60 million yen under last year.

In South Africa earnings have dropped to such a low point that many curtailments are planned. These include discontinuance of piece work schedules affecting many hundreds of employes; trains are being taken off; shops are working only on repairs; no new developments are to be undertaken. Some trains are to be run only four times a week.

In Australia the government lines have taken off the dining cars on the Melbourne route, shop forces are reduced, and other men are working only part time. Large numbers of trains are to be discontinued temporarily.

Earnings of the Chinese Eastern Railways are about five million roubles (one rouble equals about 51½ cents) under those of 1929; South Manchurian earnings are 20 to 25 million yen less than a year ago. The same condition is reported for railroads in Ireland, England, Finland, Germany, and indeed all countries reporting. In India alone the earnings from April 1 to August 23 were nearly ten million dollars less than in that period last year.

Automatic Connectors

The Canadian Railway Act contains this clause requiring the use of a device made to do the things described:

> 298 (c) To securely couple and connect the cars composing the train, and to attach the engine to such train with couplers which couple automatically by impact, and which can be uncoupled without the necessity of men going in between the ends of the cars.

The Brotherhood of Railroad Trainmen applied to the Board of Railway Commissioners of Canada to hold hearings for the immediate and further consideration of the subject of automatic train pipe connectors, in the interest of the safety of railway employes, and for an order to adopt automatic devices which would obviate the necessity of men going between cars, as provided in the Railway Act.

As a result of this application a hearing was held at Ottawa, October 21, when evidence was presented by the representatives of the brotherhood and of the railroads. The railroads' representatives declared they were willing to adopt connectors if they were standardized on railroads in the United States. To adopt any other kind, they declared, would impede traffic at points of interchange. They then presented evidence showing connectors were now being tested at Purdue University under agreement of the brotherhood, the Interstate Commerce Commission, and the American Railway Association.

A. C. Boyce, K. C., speaking for the brotherhood, contended that "the Purdue experiments were nothing more than a gesture, with the purpose of delaying the testing of mechanical devices for many years."

There is little doubt that railroads always have displayed regrettable inertia, and almost no disposition to cooperate in developing automatic train pipe connectors. It is not a novelty that men are discussing. It appeared as far back as 1896. Almost from the beginning the roads have tried to excuse inaction by arguing that no device had yet been developed that would satisfactorily insure unqualified and perfect operation under all conditions.

This is nonsense. What device ever has met such requirements in its inception? If this poor logic always had been applied we should not now have the air brake, the automatic coupler, or many other devices. None of these inventions was perfect in the beginning, any more than a call-boy can be expected to serve as an engineer until he has been tried and proved competent. Certainly the air brake was far from 100 per cent perfect when it was adopted, as men of experience know. Only by adoption, by use in regular service, can any improvement be developed properly. We feel bound to agree with the brotherhoods that little excuse exists for the snail-like progress of the Purdue tests, especially when the protection of human life is the stake.

The A.R.A. committee to investigate this subject was appointed in 1927, but nevertheless the laboratory tests of the first connector were not begun until September 29, 1930—three years later! If this kind of speed is maintained while the experimenting force putters around the laboratory we may expect to hear, in a few months, that road tests must be delayed until next winter. This means that if circumstances and conditions should prove ideal the reports from the tests may be available some time during the summer of 1932. Then, remembering the time required for the bureau of safety to consider the matter, and for the railroads to order the equipment and have it installed, it seems fair to say that relief may be expected in 1935, if everything goes along smoothly.

Meanwhile, the tragedy of lost legs, arms, lives, will be charged to Father Time when it should be blamed to the traditional disposition of the average railroad to resist such appeals until the federal government steps in and compels action. The brotherhoods seem to have a pretty clear case here in the interest of safety for coming generations of employes.

More than 100 traffic violators were examined in Detroit. Forty-two were of inferior intelligence, 12 were feeble-minded, says Capper's, one was insane and three physically handicapped. The driving ability of 46 was seriously impaired by alcoholism. Only 13 were found normal.

Little Stories About Big Men

Samuel J. Hungerford
Operating Vice President, Canadian National Railways.

IN THE ARMY of France there is, or at least there was in Napoleon's day, an axiom that every private carried in his knapsack the baton of a commander-in-chief. Back in 1886, if anyone had told young Samuel J. Hungerford, then machinist's apprentice, that he carried in his tool bag the insignia of office as vice president of the largest railway system in North America, young Samuel J. probably would have laughed and thought the speaker was spoofing him.

But for many years, both on the C.P.R., and on the Canadian National Railways, of which he is now operating vice president, Mr. Hungerford has been known as a man who knew his job; knew and won the respect of the men working for him and working with him, and who knew the ropes because he had made the various steps of progress himself. Quiet and efficient in his work, Mr. Hungerford is known in all parts of Canada as a railroad operating official who knows what he wants, and who gets things done. And the operation of the Canadian National Railways system as it stands today, is a tribute to those very qualities on the part of the vice president who is responsible for the operation, maintenance and construction work on all sections of the lines.

When Mr. Hungerford celebrated his 55th birthday July 16, 1927, messages of congratulation came to him from all parts of the great Dominion and the United States to the southward. The present operating vice president of the Canadian National Railways was born at Bedford, Quebec. He was educated at common and high schools, the latter of which he left to take a job as machinist helper on the S. E. and C. P. R. at Farnham, Quebec. Since that time, his places of residence have ranged from down in the Maritime Provinces to Calgary in Alberta, and his duties, although they have been with only the two Canadian companies, have run the gamut from machinist-helper to vice president. Out in Winnipeg and Western Canada, as well as throughout the East, many a hardy old railroad man will tell with pride of the praise he won from S. J. when it was deserved, and will admit, with hardly less pride, that when the occasion demanded it, he got whatever blame was coming to him.

After a succession of promotions, Mr. Hungerford joined the Canadian Northern in March, 1910, then in the heyday of its youth, as superintendent of rolling stock with headquarters at Winnipeg. Five years later, he moved, with the same position, to Toronto and on November 1, 1917, became general manager of eastern lines of the Canadian Northern. In 1918 he became assistant vice president, operating, maintenance and construction department of the C. N. R., with headquarters at Toronto, and on October 1, 1920, was made vice president operating and maintenance department of the Canadian National and Grand Trunk Railway.

ON OCTOBER 10, 1922, the title of general manager was added to the others on the door of his office at Toronto, and in this position he continued until February 20, 1923, when, under the plan of coordination of the Canadian National System under its president, Sir Henry W. Thornton, Mr. Hungerford was chosen for the responsible post of

vice president in charge of operation and construction for the entire system. Thus in 37 years he had climbed by gradual stages from the position of helper to one of the most important tasks in the railway management.

In Montreal Mr. Hungerford is known as a keen golfer, during whatever time he can find to spare for this recreation. He belongs to the Marlboro and the Royal Montreal clubs and also to the St. James Club.

"There are two little words in the English language," says Charles E. Denney, president of the Erie Railroad, "two little words that cost nothing but pay steady dividends to those who use them. They are: Thank you."

We have told the story of Mr. Denney's career, in this department, which deprives us of the evidence showing just how serious he is when he says such things. If you know the man such evidence isn't necessary. His whole record, his disposition, his temper, testify to his steadfast enthusiasm over the little decencies of life which, after all, are so important in business and industry.

President Denney of the Erie Railroad, Greeting Frank Brown of Elmira, N. Y., a Veteran of 66 Years' Service.

COMING in from Hollywood this morning in the ancient old green contrivance operating as a bus, we listened to the angry words of a passenger speaking to the young man employed as a conductor. The passenger, a person of some consequence apparently, had said he intended to speak to some official about the conductor's manner. "Say," exclaimed the employe, "was I discourteous to you?"

"No," was the retort. "What I think you need to learn is *how* to be courteous to the public. I fancy your natural manner would be preferred. You simply don't *understand* courtesy. It's foreign to your class."

All through the world's best literature and poetry you may find definitions of courtesy. Doubtless the bus passenger was thinking of some nice classification. He knew how easy it is to offend, to be discourteous without saying a word; a look, a movement of the head or hands, the inflection of the voice; how well most of us know that a man may be withered without violating a rule of the company. This peculiarity is so established that in the United States navy, and for all we know to the contrary, in the army also, there are regulations providing punishment for "mutinous looks."

It must be that Mr. Denney was thinking of the finer shades of real courtesy when he addressed the Erie employes recently in the company magazine. "During 1929," said he, "travelers and shippers paid the Erie Railroad more than $129,000,000 for transportation. I wonder how many Thank Yous were returned to the good customers who came to us to spend their money.

"The Erie Railroad is a corporation, but we want it to be as human as if it were an individual person. Our customers never see the corporation, and seldom come in contact with it. They do see and deal with the human beings who represent the company.

"So far as our customers are concerned You are the Erie Railroad. To every shipper who entrusts us with a pound of freight, and to every passenger who buys a ticket the Erie Railroad must smile and say Thank You." How many ticket clerks ever obey this rule in serving the public?

ONE OF the country's largest retail cigar store companies (which we think sells the punkest cigars in America) has long had a rule that if the clerk fails to say "Thank You" you needn't pay for your purchase. If some railroads adopted that rule they would be nearer bankruptcy than they are right now.

THE NAME of Ben Campbell, vice president in charge of traffic for the New Haven System is popular among traffic men everywhere, but especially in the eastern half of the continent. We found it recently in the interesting pages of the New Haven's pocket size compendium of good things Along the Line. We found the name there, we repeat, but it was only a pleasant reminder because in other years—how they do race along!—we knew the name and the man and well we remember his uncanny facility for getting business. We know, too, that if Ben sees this piece we are going to lose one subscriber, he is that modest and self-effacing. Unless there happens to be some business in the offing, and when that is the case—well, Clara Bow is a model of timidity in comparison.

WHAT A head and what a memory Ben Campbell has! Ride with him on the train some day, say the boys who have done it, and hear his comments, as you speed along. "Fifteen years ago that plant was occupied by So & So," he will say, casually, "and we used to get 12,000 tons out of there." And he'll tell you just what happened and why. Or: "You see that land over there—I had that sand analyzed back in 1911 and it showed so and so."

So if you're one of Mr. Campbell's men, and he tells you something, be pretty sure to listen with both ears and let it sink in deep, for he dislikes to have to tell you the same thing over and over again. If you bring up something of that kind for his opinion, your own memory being somewhat shorter, he will most likely remark witheringly, "Why, I told you back in 1916, when that matter was brought up by Such and Such Company, that it would be impossible to do it because of such and such a clause in the lease."

"And does he know traffic!" these traffic men will remark, with awe in their voices. "You ought to sit in some time at a district traffic meeting, attended by 30 or 40 traffic men from all over the East, none of them less than a 'v. p.,' and some of them presidents, and note the respect paid to anything Mr. Campbell has to say! There are just about two other traffic men in the country who can begin to match up with B. C."

THEIR confidence is contagious. They are so certain you just *know* they must be right. If there's a man in the country who knows more about rates than Ben Campbell the New Haven outfit would be glad to hear the name, and that goes whether the rate involves five cents or five millions. And he knows the history and background and reasons for them.

And what a man for work! You can't tire him out. He can tire out half a dozen assistants without batting an eyelash himself. A typical day for him is to get up along about 5:30, board a train from New York, getting him into New Haven early in the morning (studying papers on the way up); go into a series of conferences with his men, one after the other, lasting all day—conferences dealing with most intricate detail matters, and finally ask one of his men to ride over to Boston with him on the Merchants, so they can go over some matters at greater length; and when Boston is reached at 10 p.m., he knows so little fatigue that he's as likely as not to ask his companion to walk up to the Touraine with him and go over a few more things!

And at those conferences with his subordinates Mr. Campbell's desk is always clear. The subordinates come in with thick files of papers to which they may refer to back them up in their discussion, but B. C., serenely sitting at the other side of that desk, often shows himself to know the contents of the file far better than the man who is holding it! A typical remark is: "Yes, but just look down through that file and you'll find a letter written me by So and So back in 1908, that," etc., etc. —and sure enough, there it is.

A wonderful mind and a wonderful memory, which can encompass oodles of detail. Yet when Mr. Campbell sets a man to a task he expects him to complete it himself, and he doesn't want to be bothered with unnecessary questions. He wants the job performed.

He is not very strong for talking; in fact, is exceedingly sparing of his words, preferring action to talk. He believes in letting others climb aboard the band wagon and make the noise. His way is to do things. He has a certain niche to cover in the New Haven's transportation scheme and quietly and effectively he covers that niche so that it's mighty seldom anything gets by.

Another feature of "Ben" Campbell's vast knowledge of traffic matters is the fact that he has worked from one end of the country to another. If anyone tries to put something over on a transcontinental rate, for instance, he is very likely to surprise him by showing an intimate knowledge of the particular remote territory, even to knowing the station names in order.

Benjamin Campbell, Traffic Vice President, the New Haven System.

BEN CAMPBELL is a great traffic man — we class him with Gorman of the Rock Island — because he had the right start. Obviously, this means that he began as a telegraph operator. It was on the Cairo & Vincennes in 1875 when he was about 18 years old. He stuck to that job about a year. Between 1876 and 1884 he was an operator, station agent, traveling freight agent and general agent for the Minneapolis, St. Paul & Sioux City (the Chicago, St. Paul, Minneapolis & Omaha Ry.) Beginning with 1884 and coming down to these modern times Mr. Campbell has been general for the Union Pacific at Portland, general freight agent for the O. R. & N.; traffic manager for the same road; assistant traffic director for the Union Pacific and the Southern Pacific systems at Chicago; fourth vice president of the Great Northern, and finally, since May, 1907, vice president of the New Haven. He was only 28 years old when he was general freight agent for the O. R. & N. He isn't much older today if you consider the way he makes others hustle to keep up with him. He was born in Indiana, a state famous for the producers it has produced—born in Indiana in 1858 at Liberty, and may he be at liberty for many a year.

AND NOW, here we are, writing about the Big Men of the air lines, the men John McCutcheon would call the Mysterious Strangers of transportation. For example, here is Harris Walton Beck, best known as "H. W." in the world of transportation. Particularly in the Southwest, Mr. Beck has made such consistent advancement during his entire business career that his record rather closely resembles an Horatio Alger romance of boyhood. It is significant that his accomplishments are completely built on the conventional bromides for success — hard work, study, midnight oil, and loyalty.

Despite the fact that he is the traffic manager for the entire T.A.T.-Maddux Air Lines western division, H. W. is still a youngish man; far younger in pep and energy, enthusiasm and hopes, than his actual years might indicate. He is only 40, born in Memphis, Tenn., March 18, 1890.

Beck's family moved to Paris, Texas, and later on to Kansas City, Mo. In that city he finished his public schooling and became a pupil in the old Westport High. After graduation, a new smile was to be found in the Pullman car ticket office in the Kansas City Union Station. The smile belonged to the courteous youngster who had just acquired the title of assistant ticket agent. As such, he had to sign his name often. At first the full name "H. W. Beck" was used; but not long after, only the initials were employed. And it was only a matter of time until the final initial incorporated a bit of a left-handed flourish, just enough to make it so it wasn't any too legible.

BEFORE long the initials "H. W." developed into a name. They characterized a personality.

H. W. took his job with the Pullman Company seriously, and early in 1909 he could answer off-hand all kinds of questions asked by prospective travelers. He could take care of two persons while the other fellows were taking care of one. And H. W.'s customers all went away pleased with his smile and the trace of his southern drawl.

In no time, the boy behaved like an animated railroad encyclopedia. He could just as readily tell you about service out of Boise, or Macon, or Bangor as he could out of Kansas City. In short, he was too good to be wasted on sleeping and parlor cars, so the kind hearted Kansas City Union Station ticket office officials kidnaped him and put him to work in the merry old whirlpool of general traffic, where a high-powered human travel guide could be appreciated. And the title "Assistant Ticket Agent" meant a lot to the agreeable young man who possessed it.

It meant so much—or perhaps it was because so many unusual questions were asked, that prompted H. W. to write to Harvard University for a list of their text-books used in their course on transportation. When these had been purchased, they were studied thoroughly, incessantly. Executives with years of experience behind them were asked about numerous problems. Engineers, dispatchers, telegraph operators, no favorites were played, were all approached for information and the "rambling railroad record" now generally known as H. W. soon became a thoroughly useful bureau of information.

THERE was consternation in the Kansas City station when H. W. handed in his resignation, explaining that his family was moving to California. This was in 1912. In Los Angeles, H. W. applied to the Southern Pacific for a job. With his knowledge and experience, he was soon busy as a clerk in the Los Angeles station, and for the better part of a year, he continued as a clerk.

Clerking wasn't so satisfactory, so early in 1913 an opportunity came for the young man to go with the Santa Fe. This job required a swallow-tailed uniform with brass buttons and a stiff visored cap with a brass plate. For about one year, H. W. was a collector, a kind of assistant conductor, between Los Angeles and San Diego.

In 1914 H. W. went into the general claims department, where it was

Ray-Huff Photo.
H. W. Beck

reckoned his smile would have a good effect on those who personally called with grievances, and where his knowledge of travel conditions in general would generate diplomacy in the many propositions handled by correspondence. The claims department was well named; it was filled with all kinds of claims. To function properly would require a combination of prime minister, Philadelphia lawyer and sly statistician, so a course on law, economics and organization with Pace and Pace was arranged.

This extension course just naturally ruined the nights for about four years. This wasn't so awful, however, as H. W. had successfully passed through the several stages of courtship—all of which culminated in his marrying the former Mabel Ellen Smith of Los Angeles on July 10, 1915. In the same year H. W. was advanced to the position of assistant chief of the passenger accounting department for the western lines of the Santa Fe. In 1917 he became special assistant for disbursements. In 1920, H. W., then only 30 years old, was appointed chief of the passenger accounting department and he was so successful that in May, 1924, he was made chief rate clerk of the Santa Fe general passenger traffic department, a position so important that it generally is filled by men with more lengthy active railroad experiences than encompassed by all the years in H. W.'s life. In January, 1926, he was advanced to the duties of chief clerk of the general traffic department. Before long came another promotion; he was made assistant to James B. Duffy, assistant traffic manager of the Santa Fe's western lines.

For three exceedingly busy years, H. W. was Duffy's right hand man, and very early in 1929, when the first activities connected with the hook-up of the Santa Fe, the Transcontinental Air Transport and the Pennsylvania Railroad started to develop the first transcontinental plane - and - train through transportation, it was H. W. who supplied a world of information to the executives of all three organizations in the hook-up.

IN APRIL, that year, the Transcontinental Air Transport organization was practically completed, and H. W., as Duffy's right-hand man, had so impressed the many officials of the new air lines with his amazing grip on transportation throughout the Southwest, they invited him to become the traffic manager of the western division of the air line. And thus endeth more than 16 years with the Santa Fe.

The first duties of the new traffic manager for the first important long-distance, cross-continent air line were to promote and publicize throughout the entire Southwest the opening and operating of his organization. In the early fall of 1929, Beck was elected vice president and traffic manager of the Maddux Air Lines, these new responsibilities to be additional to his duties with the T.A.T.; his first air line having been sufficiently publicized to now be known by the shorter and more practical initial-name. Within a few weeks, the T.A.T. and the Maddux Air Lines were merged. H. W. merely merged his duties. He automatically became traffic manager of the new T.A.T.-Maddux Air Lines, with jurisdiction throughout California, Arizona and New Mexico. His present airway is approximately 1400 miles in length, extending from San Francisco on the North, Agua Caliente, Mexico, on the South, through Los Angeles eastward to Clovis, New Mexico, just eight miles from the Texas border. The record for the 1400 miles was so excellent that when the Transcontinental and Western Air, Inc., was formed by merging the T.A.T.-Maddux Air Lines and the Western Air Express early in October, 1930, Beck was invited to become traffic manager of the entire western division of the new organization. This includes much more mileage and additional territory, all of which unite in about the most varied and interesting air transportation position in aviation.

"The capacity of the human brain is tremendous, but people put it to no use. They live sedentary mental lives."—*Thomas A. Edison.*

The Water Conditioner on the Milwaukee

By

A. G. Hoppe

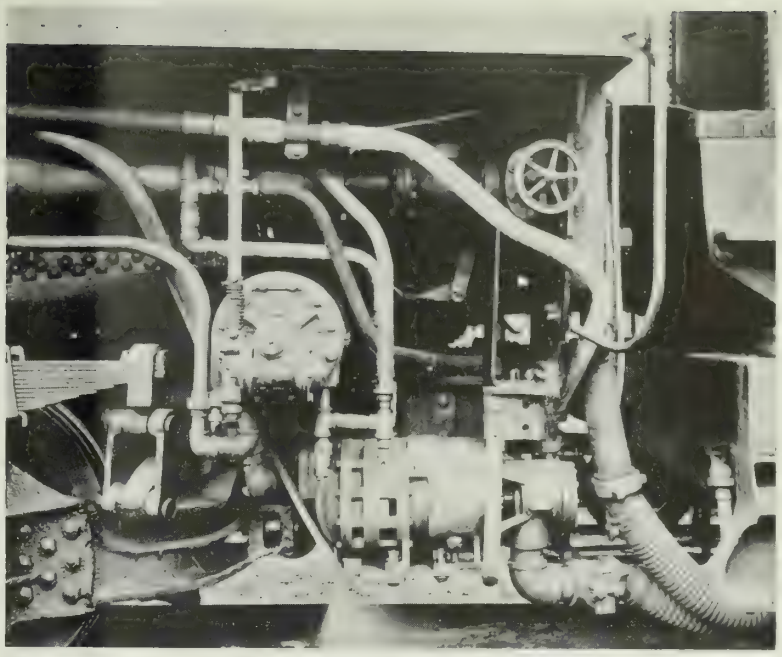


Figure 4. Application of Boiler Feed Pump on Conditioner Locomotive, Showing Piping Details.

STEADY progress has been made in means of feeding water to locomotive boilers since the first locomotive was placed in service. Steady progress has also been made in the chemical correction of water quality but not over so long a period. In the early thirties of the last century, the hand pump was the only means for supplying the boilers with water. The manual labor represented therein very quickly produced the cross-head pump, which took its power from the main engine.

Much might be written of the difficulty encountered by engine crews in maintaining water levels with this old standby. Some of them were amusing. There are men living today who can recall the expedient used when they became stalled in snow. By jacking part of the weight from the main bearings, and with the help of snow and ice between tires and rail, they could slip the drivers and keep the boiler alive. This much of present application can be said of this historic equipment: It was its own safe-guard against putting water into the boiler when not working steam. The water was cold, of course.

A paper delivered before the St. Louis Railway Club Oct. 10. Mr. Hoppe is engineer of tests for the C. M. St. P. & P.

When the first injector was placed in use it met much opposition on account of its complicated principle. That principle remains the same today. The conventional injector heats the water, but with live steam, while recoverable heat units travel merrily out of the stack. The exhaust steam injector attempts to correct for this loss and does so, but only when the main engine is working steam.

Several admirably designed equipments for supplying boilers with heated feedwater are in use, but heretofore they have pumped unheated water through exhaust steam heaters on its way to the boiler, with the same objection as in the case of the exhaust steam injector. The water passes cold to the boiler when the main engine is not working steam, unless live steam is used, at such time, to supplement the heating effect.

There are other difficulties incident to the pumping of water through a heater. One of the most troublesome is Nature's effort to help precipitate the hardness impurities in the heater. An open heater with provision for storage of heated water available for continued feeding at any time, offers the best solution, and is preferred in best stationary practice today. On a locomotive, however, this type necessitates the use of a feed pump which will satisfactorily accept hot water and deliver it with reliability to the boiler.

The storage, in a compartment open to the atmosphere, of water heated by means of exhaust steam otherwise wasted, effects other advantages, than those indicated. It makes effective the assistance offered by Nature in precipitating hardness impurities where they cause no damage or maintenance charges. It returns and combines with the feedwater 15 per cent or more of distilled water represented in exhaust steam recovered. It allows of further chemical reaction from treatment applied directly, or at the wayside (water at 212 degrees is treated chemically 60 times as rapidly as at 60 degrees). It permits and causes the elimination of oxygen to the extent of 80 per cent. (Experts in corrosion state this is sufficient). It provides a boiler supply for use at all times whether the locomotive is working steam or not.

As indicated the boiler feed pump is the heart of the apparatus. The difficult conditions which have been met, had not been met heretofore. The requirements are: constant feed, large delivery volume in limited space, safety, sturdiness, reliability, and acceptance of water up to 212 degrees F. in temperature.

The centrifugal principle alone appeared to meet these conditions. This necessitated the development of an economical turbine and of a new centrifugal water end. The foremost engineering talent in each of these fields was called into the problem. The results of the endeavors are described later in this paper.

The Locomotive Water Conditioner was designed to take advantage of the established principles referred to and adapt them, in a work-

able manner, to the locomotive power plant. The conditioner is an open storage type exhaust steam feedwater heater situated on the tender. It is constructed by partitioning off part of the tender, in our case the left water leg. This gives us a compartment containing about 700 gallons of water. Exhaust steam is brought back from the cylinders to heat this water to the boiling point, and the temperature is held uniform at this point by thermostatic means as long as exhaust steam is available. A fixed water level is maintained in this compartment as long as the engine is in operation. When the engine drifts or stops this supply of stored hot water may be drawn upon to feed the boiler. The water supply to the boiler is handled by a centrifugal boiler feed pump of special design.

There are two types of this apparatus now in service on our railroad. Type "A" uses a turbine-driven cold water pump, while Type "B" uses an exhaust steam ejector. The two types are the same except for the method of getting the cold water into the heater.

In addition to the design features mentioned it was decided to so construct this equipment that its operation would be as nearly automatic as possible. To reduce the boiler feeding operation in its simplest form meant that it must be reduced to a one valve operation and made available for use at all times. The conditioner equipment is so constructed. There is but one valve to operate, and this controls steam to the pump turbine. A thermostatic valve set to close at 140° draws steam from the pump supply line to temper the water to this temperature at any time when it is below this valve, thus protecting the boiler from the injection of cold water. This valve admits live steam to heat only the water on its way to the boiler and then only when exhaust steam is not available.

The centrifugal boiler feed pump consists of a steam turbine, pump and regulating device assembled into an enclosed and compact unit. There are no additional control valves, overspeed trips or any other parts required in the operation of the pump. Regulation is by means of an ordinary glove valve in the cab. The finished pump unit presents a very simple and pleasing appearance.

The water end consists of a two-stage double suction, high efficiency pump. It is assembled from the end and may be completely taken apart and put together on the locomotive in less than 30 minutes, without disturbing any pipe or hose connections. The pump was designed particularly to handle water at the boiling point, in connection with the Locomotive Water Conditioner.

The ruggedness of the steam turbine is emphasized by the fact that it has a very large diameter steel shaft, and that the turbine wheel is a one-

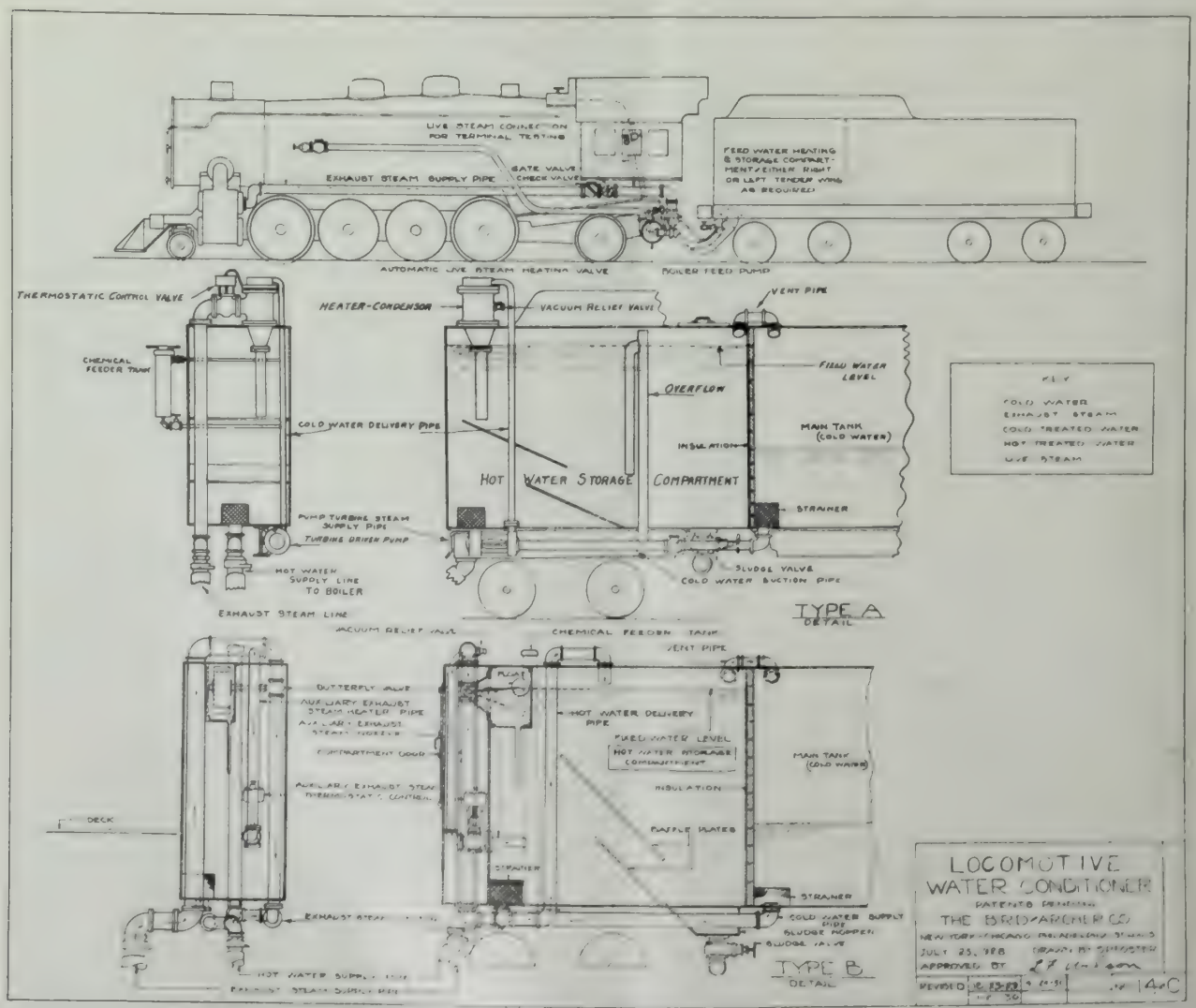


Figure 1.

piece steel forging. The castings are very heavy to insure accurate alignment of the bearings, and the bearings themselves are of a special design adapted to the high speed at which this turbine is operated. The turbine wheel was designed to withstand speeds of 30,000 r.p.m., without failure. (Although the maximum operating speed is limited to 6000 r.p.m.) Thousands of similar turbines in locomotive service certify to its safety.

A point of weakness in the average centrifugal pump used in locomotive service heretofore has been the bearings. The bearings of this pump are of a new but tested design. They use brass spacer blocks carried on the balls, instead of the ordinary stamped steel spacer rings. This presents the advantage of having a brass to steel bearing in the ball race. Over-speed protection is provided by a fly-ball governor designed along the lines of a standard governor, which has been used in a large number of turbines in locomotive service. The governor mechanism and bearings run in a constant bath of oil. Lubrication of the bearings and governor mechanism is accomplished by an ingenious arrangement of the governor shaft which is hollow, and has screw shaped flutes on the inside walls which lift the oil from a large reservoir provided in the center casting and gives a continuous spray over all moving parts requiring lubrication. The oil supply is replenished at one point for the entire unit. The design of the turbine and pump is such that condensation from the steam end and water from the pump end cannot enter the oil chamber. Provision is made for automatically discharging upon the ground any moisture that gets into the oil from any source. The pump has a capacity of 9,000 gallons an hour and is suitable for all but very high pressure, special installations.

The apparatus described in detail, has three major functions to perform. These are: Feedwater heating, storage of hot water, feedwater treatment. As a feed water heater it is efficient in maintaining a uniformly high temperature of water. Its thermostatic control has the effect of increasing or decreasing the heating surface in accordance with the demands on the locomotive. Being constructed with no small parts, scale or carbonized oil cannot affect its efficiency. As constructed, the smallest section handling water is a three-inch pipe.

Figure 2. Mikado Engine Equipped With Locomotive Water Conditioner.

The storage of several hundred gallons of hot water for use when the engine is standing or drifting extends the efficiency of the apparatus. Switch and transfer engines may now profitably employ feedwater heating with this device.

As stated already, Nature provides means of precipitating hardness impurities when heat is applied to water. Carbon dioxide gas is driven off and calcium carbonate is precipitated. This precipitation is welcomed in the Locomotive Water Conditioner since provision has been made in its design for discharging such precipitation at terminals. Chemical reagents may also be used, in a feeder designed for the purpose, to change permanent hardness to temporary hardness and then to precipitate the latter by heat.

In designing this equipment, provision for its constant availability was considered from the standpoint, not only of allowing the feed pumps to be used at any time, but also of making the locomotive itself more available for service. By designing a feedwater heater that requires very little cleaning or attention to maintain its efficiency we increase the availability of the locomotive. By insuring against the injection of cold water which would cause excessive strains on the boiler we take a further step toward making the locomotive more available by reducing hours out of service.

Throughout the development period the temperature of the water entering the boiler has been closely observed. In addition, test records of temperature and oxygen removal have been made by Dr. C. H. Koyl, water service engineer of our railroad. His report shows that on one test run an average temperature of 208.6 degrees was obtained with an average oxygen removal of 89.8 per cent. Twenty-four temperature readings were taken on this occasion and 12 oxygen determinations made of the water that passed through the conditioner. An average of three tests of this nature showed, however, an average oxygen elimination of 82.4 per cent. These figures are offered in evidence that the conditioner equipment functions as intended, and does it with a minimum of maintenance expense.

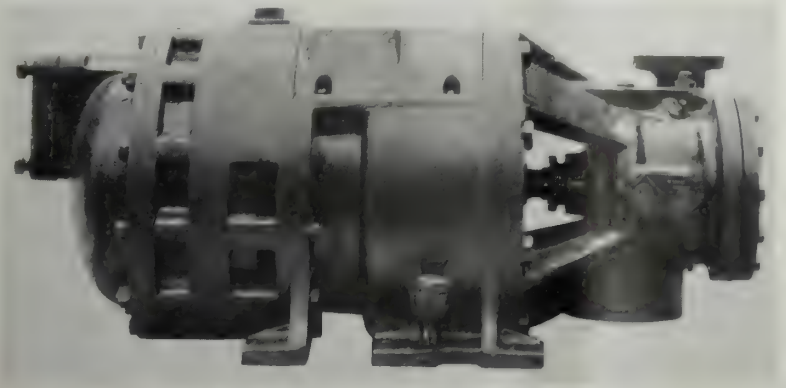


Figure 3. B-A., Centrifugal Boiler Feed Pump.

Airplane Engines Efficient

The engine in the first airplane to fly produced 12 horsepower and weighed 16 pounds for each horsepower developed. The 525 h.p. Hornet motors used on Boeing System's transcontinental planes weigh one and one-quarter pounds for each horsepower developed.

The Queen of the Celebration is Greeted on the New Bridge by Officials and Guests.

So Ends the Old Ferry

OPERATION of the first train Oct. 15 over Southern Pacific's $12,000,000 bridge across Suisun Bay in the upper reaches of San Francisco Bay, recorded the West's biggest construction project of 1929-30. The 5603-foot double-track structure is the longest and heaviest railroad bridge west of the Mississippi, and is not exceeded in its load-carrying capacity by any other bridge in the country.

Completion of the bridge causes the retirement from service of the steamers "Solano" and "Contra Costa," famous as the largest ferry boats in the world, which for many years have ferried trains across Carquinez Straits in a fascinating phase of the railroad journey into and out of California over the Southern Pacific's Overland and Shasta routes.

The bridge is situated near the former train-ferrying point between Benicia and Port Costa, about 35 miles from San Francisco. Ferrying trains across the straits previously required an average of 35 minutes for passenger trains and more than two hours and a half for freight trains. Not only will economies and conveniences in the handling of trains result from use of the bridge, but there will be also a shortening in the running time of trains over the two routes affected. Trains are now operating at slow schedule over the newly constructed heavy fills at both approaches to the bridge, and it will be a few weeks before any revision in train schedules is announced.

Formal dedication of the bridge, November 1, attracted thousands of people from cities in the San Francisco Bay section. The celebration was sponsored by the city of Martinez, which is near the south approach to the bridge. Civic organizations of other neighboring cities joined with the railroad in making the day a gala affair. A "queen" christened the bridge with the name "Martinez-Benicia." United States Senator Samuel M. Shortridge delivered the principal dedicatory address, praising the railroad for its farsighted policy in carrying to completion the gigantic project at a time when general business prospects have not been the brightest.

Bearing up proudly under its heavy load of passenger equipment and joyous excursionists, the flag-bedecked ferry boat, "Solano," presented a colorful sight as it steamed across the straits on its farewell trip after more than half a century of service. Another picturesque feature of the day's celebration was the pageant of progress which moved across the bridge with the historic locomotive, "C. P. Huntington," followed by one of the modern giant engines. Puffing and steaming as in the days of old, the trim little locomotive, scarcely as long as the tender of its present-day brother, strikingly depicted the development that has taken place in railroad equipment since the first transcontinental railroad was completed some 60 years ago.

Paul Shoup, president of the Southern Pacific, headed the delegation of officers from that company. Among other officials in the party were: former president William Sproule, vice presidents W. A. Worthington, J. H. Dyer, J. T. Saunders, and F. S. McGinnis; Frank Mulks and C. R. Harding, assistants to the president; F. L. Burckhalter, general manager; W. H. Kirkbride, engineer of maintenance of way and structures; H. A. Hinshaw and E. W. Clapp, general freight and general passenger traffic managers, respectively; and T. Ahern, assistant general manager.

The bridge was erected in the remarkably fast time of 18 months under the direction of Mr. Harding and Mr. Kirkbride. They were assisted by G. W. Rear, engineer of bridges, and H. I. Benjamin, assistant engineer of bridges, who were in immediate charge of field work. S. A. Roake, chief designer, designed the foundation and superstructure.

Several unusual engineering features attracted nation-wide attention. Sinking of piers across the deep water channel presented the most difficult problem. Tidal fluctuations and swiftness of current added to depth of water, prevented the use of open cofferdam work, or the pneumatic process, or the sinking of caissons by the open well dredging method. The problem was solved by the sinking of a steel cylinder 81 feet in diameter. This was filled with sand dredged from nearby waters, creating an arti-

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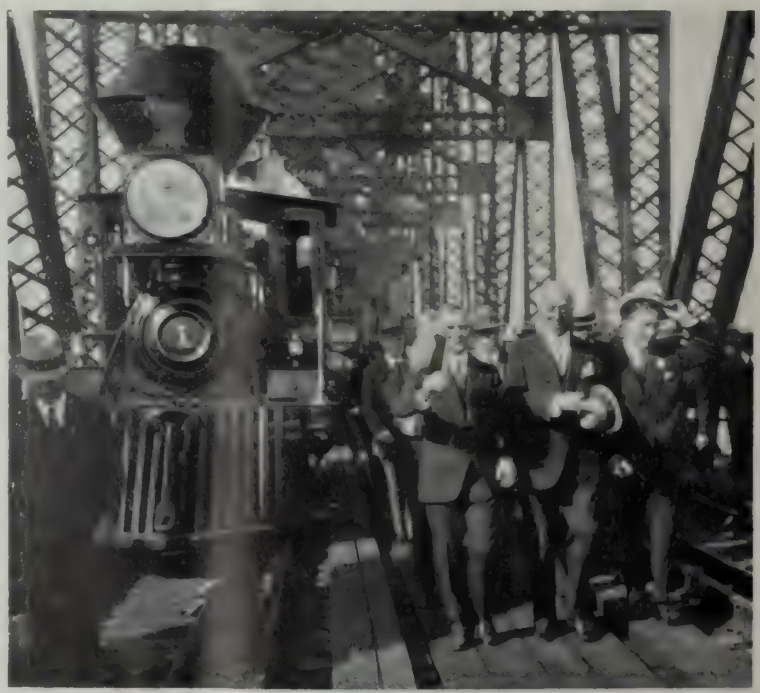
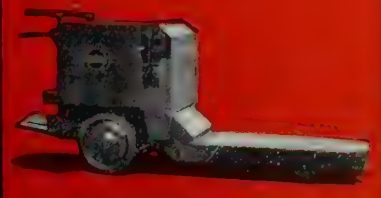


President Shoup, Senator Shortridge, and Vice President Dyer Leading the Procession; the Ancient Locomotive, C. P. Huntington, Number 1, of Southern Pacific Engines, is Following Dick Kelley, that Company's Grover Whalen at Such Ceremonies.



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IN THIS YEAR of smaller profit margins, the concern with the lowest production costs will win. We are prepared to prove that Baker Trucks can reduce handling costs in production by as much as 75%. And that, too, without adding to capital charges because Baker Trucks actually pay back their entire purchase price—in payroll saved—in from 3 to 12 months.

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THE BAKER-RAULANG COMPANY

2180 West 25th St. • • Cleveland, Ohio

D. F. Crawford Joins Staff

(Continued from Page 12)

position he held until January, 1917, when he was appointed general manager of the Pennsylvania lines west, which position he held until June 1918, when he resigned to accept the office of vice president and general manager of the Locomotive Stoker Company. This position he held until February 1, 1928.

To describe Mr. Crawford's professional activities in full since the beginning would be to write a fairly large book. Even in the four years he served at Altoona as a special apprentice he advanced rapidly in special work in locomotive testing, and in testing various locomotive, car and shop appliances. This kind of work was enlarged in responsibility when he became an inspector in the testing department, and included everything likely to be included in such duties. One finds his name high on the lists in every mechanical task from rehabilitating the electric lighting systems of the Fort Wayne shops and the Union Station at Chicago in 1895, to special duty at the works of the Westinghouse Electric & Mfg. Co., at East Pittsburgh. Between 1895 and 1899, as assistant to the superintendent of motive power for the Pennsylvania at Fort Wayne we find him assisting in designing locomotives, passenger and freight cars, shop machinery, coaling and watering stations, and shop and enginehouse layouts. At Columbus and Cincinnati he designed and installed electric lighting plants for the union stations.

And so on, page after page, we find Mr. Crawford studying, designing, planning and building, year after year, one assignment after another, always assuming additionally important undertakings calling for the best in engineering skill. Between 1903 and 1916 we find his name among those who appeared many times for the railways before the Interstate Commerce Commission, committees of the senate and house at Washington, and before the legislatures of Pennsylvania, Ohio, Indiana, and Illinois in connection with pending legislation. His tact and forbearance were strikingly displayed in his work when appearing for the railways also in arbitration proceedings with the Brotherhood of Locomotive Firemen and Enginemen. His administration as general manager of Pennsylvania lines west of Pittsburgh added much to his prestige as an experienced railroad man.

Mr. Crawford designed, patented and put in service an underfeed stoker for locomotives and draft gear for freight cars, also designed and patented compound rail, automatic train control, railway signals and other devices.

From June 15, 1918, to February 1, 1928, Mr. Crawford was vice president and general manager of the Locomotive Stoker Co., at Pittsburgh. From February 28, 1920, he was also president of the Westinghouse Union Battery Co., at Swissvale, Pa. From February 1, 1928, to February 28, 1929, he was consulting engineer for the Standard Stoker Co., Inc., successors to the Locomotive Stoker Co. Since March 1, 1929, he has been a consulting engineer in professional practice registered in Pennsylvania.

In addition to all these important duties Mr. Crawford has taken active part in the work of the American Railway Master Mechanics' Association, since 1904, in committee work, and in the offices of three grades of vice president, and finally, in 1912, as president. Throughout these years also he was identified actively with the Master Car Builders' Association in many capacities, and in 1914 as president. He contributed much time and labor to the American Railway Association, as he did to the International Railway Congress beginning with the seventh session at Washington in 1905. In this service he attended the sessions at Berne, Switzerland, in 1910, at Rome in 1922, and at London in 1925. He was appointed a delegate for the government to attend the session at Madrid last summer but found it impossible to go.

Mr. Crawford was director of railway engineering in the University of Pittsburgh, and bears the honorary degree of Doctor of Engineering, conferred upon him in 1915 by the University of Kentucky. He is a fellow or a member of about 20 societies, associations or clubs allied in railroad engineering or scientific matters in this country and abroad. And in addition to all these is a member of almost as many clubs of one kind or another, social, or industrial.

Of course Mr. Crawford is married, and also, of course, he has something in his mind besides engineering and editing. You get a clue to this chief joy in his membership in the Guernsey organizations. When you visit his summer home, Roselea Farm, at Coraopolis, Pa., you know why he finds life increasingly worth while. We have always believed that what the Guernsey breed needed in this country was a good engineer. So we know Roselea Farm must be a happy place. Mr. Crawford continues his practice as consulting engineer. His address is 5243 Ellsworth avenue, Pittsburgh.

So Ends the Old Ferry

(Continued from Page 38)

ficial island on which the concrete piers were erected in sections above water, and sunk to bedrock as the sand was excavated through wells in the caisson. As the caisson neared bedrock a deep-water diver went down to explore the bottom. He telephoned the conditions existing within and under the caisson, assuring that the bridge piers are actually resting on bedrock. It is believed this is the first time that a deep-sea diver has been used in the construction of bridge piers sunk to such great depth of water.

The deepest pier is 207 feet from bedrock to bridge seat, or the equivalent height of a 20-story building. It has a base of 40 by 60 feet. There are ten main piers and 22 pedestal piers on viaduct approaches. Construction of the piers required 105,000 cubic yards of concrete and 1500 tons of re-inforcing steel. The piers are capable of resisting earthquake shock twice the intensity of any ever recorded.

The use of one of the permanent deck spans as falsework for the construction of the other spans in the bridge, was another unique engineering feature. The span was floated from one position to another as construction progressed and finally was put in permanent position at the north end of the bridge.

The bridge consists of seven 526-foot through truss spans, two deck spans of 264 and 504 feet; one 328-foot through vertical lift span, a 560-foot viaduct at the south, and a 220-foot viaduct at the north approach. In addition to the bridge proper the project required the construction of about six miles of new track at the two approaches.

"Socialism makes you discontented with your neighbor, while Christianity makes you discontented with yourself."—*Lady Astor.*

"It is home surroundings that, to my mind, set a boy or girl on the road to success."—*Sir Thomas Lipton.*

"The airplane augments rather than replaces ground transport."—*Colonel Lindbergh.*

British railways closed 90 stations throughout Great Britain to passenger traffic, bringing the total number closed this year by four big roads to 176; this action is the result of trade depression and the growth of motor bus travel.

IMPROVED HIPOWER

The High Bolt Tension Spring Washer.
Rust-resisting.
Commercially non-flattenable.
Ultimately costs less.

IMPROVED HIPOWERS HAVE

—high bolt tension,—assuring great girder strength.
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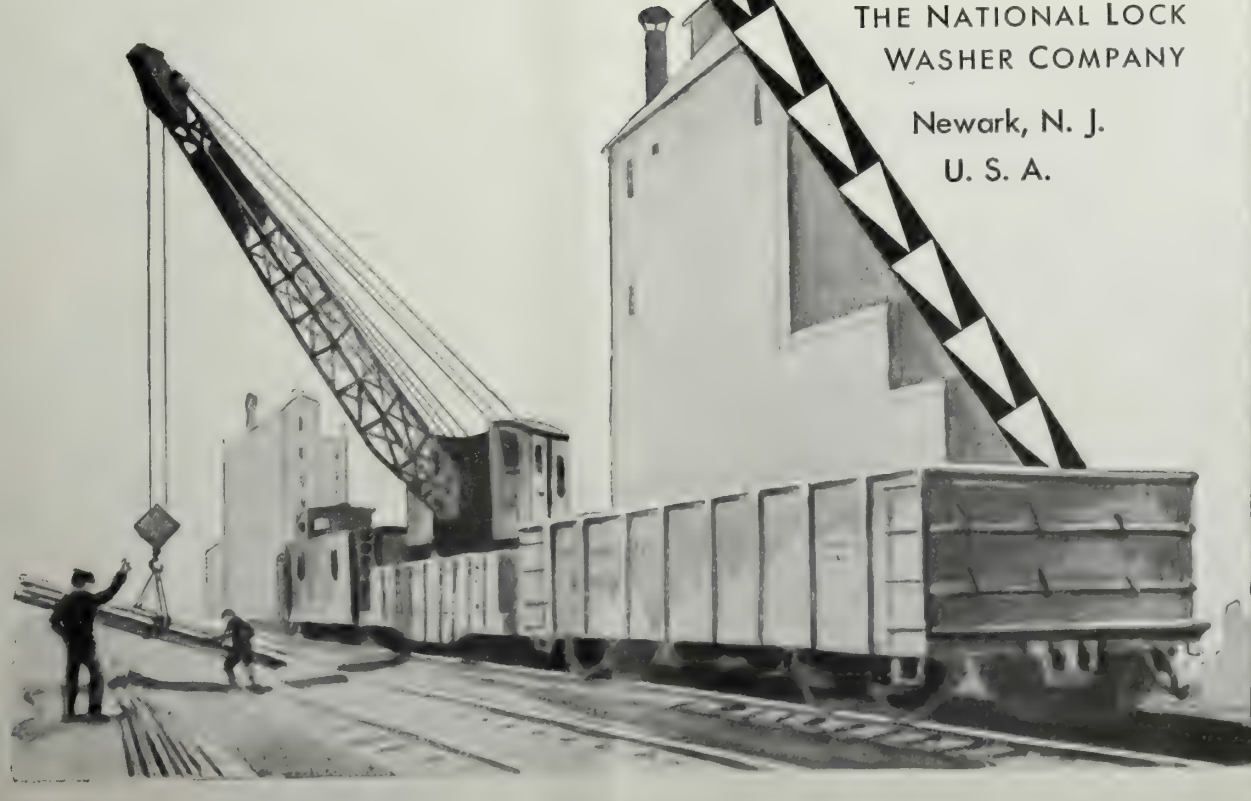


Long Runs for Engines

ORDERS FOR one of the longest locomotive runs in regular passenger service in the United States is announced by the Northern Pacific Railway Company. The run will be between Jamestown, N. D., and Missoula, Mont., a distance of 904 miles.

Beginning October 28, the Northern Pacific in its transcontinental passenger train service between St. Paul and the Pacific coast will have only three engine runs. This is to be contrasted with 13 engine runs in effect about five years ago. The engine runs will be between St. Paul and Jamestown, 344 miles; Jamestown to Missoula, 904 miles; and Missoula to Seattle, 656 miles. The railway company in the last year has made extensive improvements to roadbed and bridges, particularly between Glendive and Billings, Mont., which enables it to use the heaviest passenger power in that area. The longer engine runs on the west and east ends have been in effect for some time.

The locomotives which will make the through run for 900 miles are the 360-ton, 104-foot-long type. The tender carries 24 tons of coal and 15,000 gallons of water, eliminating many coal and water stops necessary with the smaller power. There are four wheels on the leading truck, eight driving wheels and four trailing wheels. They are declared to be the largest and most powerful locomotives ever to be constructed for passenger train service in the Northwest. Twelve of these locomotives, costing $1,300,000, now are in service. With the establishment of this long engine run, locomotive changes have been eliminated on Northern Pacific passenger trains at Glendive and Livingston, Mont.

To Abandon 40 Miles

Authority to abandon operation over 40 miles of the Houston & Texas Central Railroad between Waxahachie and Fort Worth, Tex., was sought by the Burlington-Rock Island Railroad in an application filed with the Interstate Commerce Commission.

The application explained that the railroad proposes to enter into a lease contract with the Fort Worth & Denver City Railway and the Chicago, Rock Island & Gulf Railway, wherein those two roads are to take over and operate the Burlington-Rock Island Railroad's line between Teague and Waxahachie, and to operate their lines of railroad from Waxahachie to Dallas by means of a trackage contract with the Missouri-Kansas-Texas Railroad of Texas, and from Dallas to Fort Worth over their own lines of railroad. Such an arrangement, it was said, will make it unnecessary for the Burlington-Rock Island to operate over the Houston & Texas Central between Waxahachie and Fort Worth, to serve the latter point.

Train Orders Now by Telephone

Trains on nearly two-thirds of the total rail mileage of this country are now being handled by telephone, the telegraph and telephone section of the American Railway Association announces. Reports just received from the railroads by that section show that on January 1, 1930, telephones were used for the transmission of train orders over 154,277 miles of road compared with 101,548 miles which continue to use telegraph wires. The extent of the increase in the use of the telephone for the transmission of train orders is shown by the fact that on January 1, 1920, the miles of road on which the telephone was used totaled 119,554. On the same date, the telegraph was being used on 134,667 miles of road. Through the use of the portable telephone sets, bridge and building gangs and others at work along the right of way also keep in constant communication with headquarters. The use of the telephone also enables the railroads to bring about many other efficiencies and economies which otherwise would not be possible.

Just Like a Trainmaster

The superintendent had severely criticized the trainmaster for laxity in reporting accidents, impressing upon him the fact that it was very necessary to report by wire immediately anything that appeared to be an accident, no matter how trivial it might seem, without waiting for details.

Only a few days later, the superintendent received the following wire: "Man fell off platform in front of speeding engine." To which the superintendent wired: "Advise details." The trainmaster replied: "No one hurt; engine was backing up."—*Santa Fe Magazine.*

But No Pee Wee Golf?

Canadian National Railways have provided a number of new features in passenger car design in the equipment added to their Toronto-Vancouver train, "The Confederation." A miniature gymnasium, containing Swedish massage machines, vibrating apparatus, and foot and hand exercisers, adjoins the lounge. A shower bath also is provided. An ice cream parlor, barber shop, valet service, and radio reception entertainment are other features. The windows in the observation cars are exceptionally large and are of vita glass which permits the passage of ultra violet rays of light.

Work at Christmas

Temporary employment will be given to about 228,000 extra persons by the Postoffice department for about ten days during the Christmas rush season, according to a statement from the department October 28.

The temporary organization to be employed during the holiday season will mean a radical departure from previous ones, according to the statement.

The department has available $6,720,000 for the employment of temporary help.

Was It the Brakeman's Ring?

A diamond ring lost in a Pacific Coast refrigerator car while being loaded with 532 boxes of pears to be shipped from California to Texas, thence reconsigned to New York City, was found at the Pennsylvania Railroad's New York produce terminal, says the Wall Street Journal.

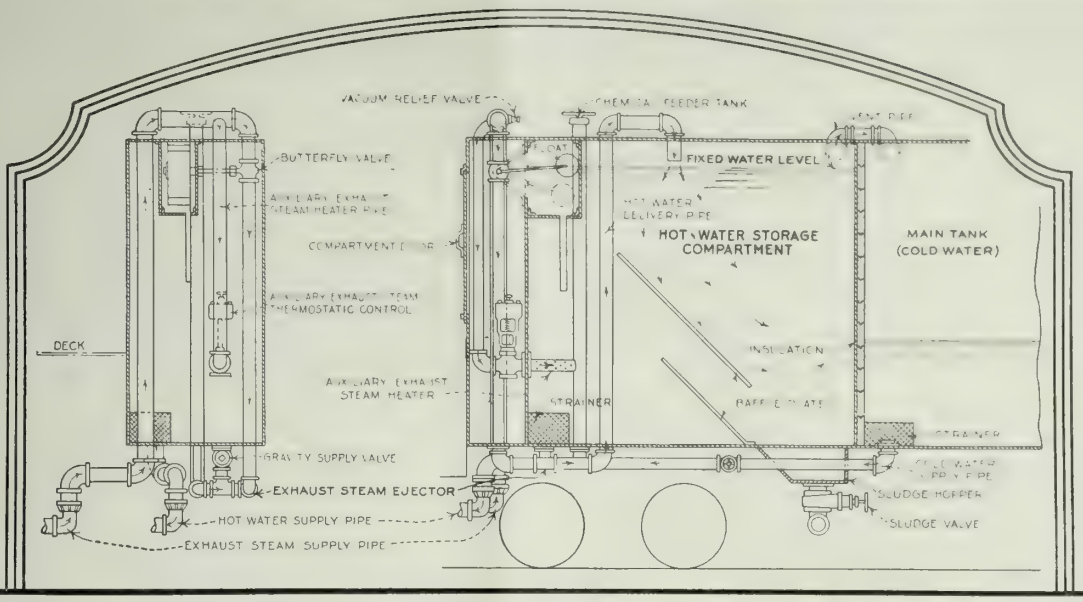
The shipment left Placerville, Cal., September 15 and was consigned to San Antonio, Tex. Upon arrival there the car was ordered reconsigned to New York. The agent at the produce terminal was notified regarding the loss of the ring but the stevedores were unable to find it. It was found later by a railroad patrolman underneath the lattice floor boards of the car near the ice bunker.

The Worm Turns

The owner of an automobile was required by a jury in Montgomery county, Penn., Oct. 11 to pay the full bill for damages caused to a railroad locomotive in a collision. The suit was brought by the Reading Railroad Co. against Merrell Margetum for $420.50 for repairs to the engine.

The railroads have one thing to be grateful for. They won't be taxed to keep up a roadbed for express planes.

Reports show that for every death in airplane accidents last year, naval aviators flew 1,015,000 miles



EASY MAINTENANCE

SCALE and carbonized oil cannot affect the efficiency of the Locomotive Water Conditioner.

OPEN storage heating chamber permits scale forming ingredients to be precipitated where they can do no harm. Both sludge and oil are drained out periodically.

WATER passages are large and unrestricted —no opportunity is afforded for stoppage due to incrustation.

ENTIRELY divorced from the engine—avoids possibility of water passing into the cylinders.

THE B-A BOILER Feed Pump (right) is an essential unit of the Conditioner. Designed to run from shopping to shopping—Rugged—Self-contained—Simple control.

Send for the Conditioner folder.

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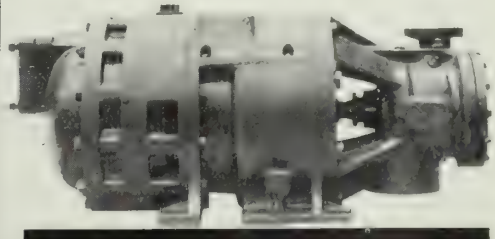
The Bird-Archer Company, Limited, Montreal

The manufacture, supply and service of boiler water treatment chemicals is the primary business of The Bird-Archer Company.

These activities and expert services properly include the installation and service of mechanical devices, likewise designed to promote locomotive boiler efficiency.



The Locomotive Water CONDITIONER

feed water heating
hot water storage
oxygen removal
water treatment

Electrical Engineers Met at Chicago

SIXTY-FIVE firms showed their products at the Hotel Sherman, Chicago, October 21-25, before the Association of Railway Electrical Engineers when that organization held its 21st yearly meeting. As might have been expected in a period when all the world is keenly interested in everything electrical, hundreds of persons not connected with the convention inspected the exhibits, apparently with as much care as did the engineers themselves.

The sessions were presided over by J. C. McEltree, president, electrical engineer of the Missouri Pacific. Joseph A. Andreucetti, electrical engineer of the North Western, secretary-treasurer, presented a satisfactory report, showing the association to be in excellent condition financially. The membership, active and associate, he said, is now 551.

R. G. Gage, chief electrical engineer, Canadian National, was elected president for the ensuing year; F. W. Reed, chief electrician, Northern Pacific, first vice president; G. W. Bebout, electrical engineer, Chesapeake & Ohio, second vice president. The executive committee chosen is: F. G. Baker, electrical engineer, 'Frisco; A. M. Frazee, electrical engineer, D. M. & N., and R. E. Gallagher, assistant electrical engineer, Louisville & Nashville.

The committee having in charge the application of radio to railway uses reported little progress because of the attitude of the federal radio commission, but said tests thus far made had proved satisfactory. The Canadian National, the report said, had made the largest use of radio as an entertainment feature, but other important improvements are developing.

The Railway Electrical Supply Mfrs.' Association elected officers October 23 as follows: Carlos Dorticos, General Electrical Co., Chicago, president; Charles Dubsky, Crounds-Hinds Co., Chicago, senior vice president; C. B. Harlow, Benjamin Electric Mfg. Co., Chicago, junior vice president. Executive committee, three-year term: H. A. Matthews, U. S. L. Battery Corpn.; A. S. Anderson, Adams & Westlake Co., and L. G. Mockenhaupt, Harvey Hubbell, Inc.

Presentation of medals broke out at the yearly dinner Oct. 23, to the satisfaction of several persons. John McC. Price, retiring president of the supply manufacturers' association, handed a past-president's gold medal to William Ross of the Pyle National Co., his predecessor; Charles Dorticos, incoming president of the electrical engineers association, gave a similar medal to Mr. Price. Then Mr. Andreucetti presented a medal to Mr. McElree, retiring president.

Death of C. P. Philbrick

One of the first contributors to this magazine was C. P. Philbrick, an old time railroad man who finished his long service in 1923 as train rules examiner for the Burlington. Mr. Philbrick lived at Downey, a little town near Los Angeles, and there he died a year ago, October 22, 1929, without many of his former friends hearing about it until quite recently.

Mr. Philbrick, as a boy, took his first railroad ride over what there was of the Burlington in November, 1860. Eight years afterward he began his working life when 17 years old, as an apprentice for what the record shows was the C.B.U.P. Railroad at Atchison, Kansas. He served for two or three years in the engineer corps of the Atchison & Nebraska, became an operator, and in the years that followed was an agent, train dispatcher, roadmaster, trainmaster, and finally retired in December, seven years ago. He was 78 years old when he died. He was born at Manchester, N. H.

Mr. Philbrick was a story teller of worth. One of his first articles written for *Transportation* described the first run of a mail train over the Burlington from Kansas City to St. Joseph, Mo., taking the place of the famous pony express riders. The story, entitled "There Goes Another Cow," told of the speed maintained against all obstructions, including a cow here and there along the way. Letters came from many old friends who enjoyed the old-timer's reminiscences. His daughter, Anna M. Philbrick, lives at Downey.

Two Old Timers Retire

Two veteran locomotive engineers in Northern Pacific passenger service whose composite record totals nearly a century of performance in locomotive cabs, were retired Nov. 1. Both had reached the retirement age of 70 years. Walter C. Heller, who has been in passenger service between Duluth and the Twin Cities, was born at Rochester, Minn., October 15, 1860. He began his service with the railway company on the Lake Superior division as a wiper in June, 1878, and became a fireman in 1880, a hostler in 1883, and an engineer on September 14, 1885. He has a record of 52 years and five months of continuous service. Isaac M. Freese, running in passenger service between Jamestown and Mandan, N. D., has a service record of 42 years and two months. He was born October 8, 1860. He was first employed as a fireman at Jamestown August 20, 1888. He became an engineer on October 20, 1897.

Egypt-India Rail Line

Present indications point toward the early realization of the 30-year dream of British railway engineers to establish continuous rail communication between Egypt and India. Recent negotiations between Great Britain and Persia to extend the Haifa-Bagdad line toward the Indian frontier have been acted upon favorably after repeated resistance on the part of Persian leaders to a proposal that British leaders be entrusted with the job.

Communication between Haifa and Egypt already exists through the Valleys of Sharon, Shephela, Sinai to the Suez Canal. Egyptian leaders desire a deviation of the line from Kantara to Port Fuad, which would be an extension of the Port Said-East Side Canal, directly connecting the famous Egyptian port with the greatest harbor in the eastern Mediterranean, now under construction at Haifa.

On the Cover

The picture on the cover this month is from a photograph taken by Robert Coburn for R.K.O., as a part of the new Radio Pictures railroad epic, "Danger Lights." Coburn has caught Robert Armstrong gazing admiringly at the Milwaukee's great locomotive, the 8624, in the enginehouse at Miles City. In the sound picture Armstrong depicts here his lifelong ambition to be an engineer. Although it was made in Los Angeles from location work done in Montana for the most part, "Danger Lights" has not yet been shown here. When we have seen it we expect to say something about it. Railroad pictures, as a rule, are fierce, particularly if some "expert" railroad man has been drafted to watch out for the t e c h n i c a l matters. "Danger Lights" is said to be the exception to this rule.

"Misfortunes may be turned into blessings by an indomitable will."—*Philip Snowden.*

MODERNIZE . . .

At Small Initial Cost

Now is the time to do all you can to help the unemployed, and our suggestion embodies the following:

1. Franklin Driving Box Spreader insures parallelism of box jaws, permits proper functioning of shoes and wedges, and reduces the cost of maintenance by substituting cast steel for cast iron. Bulletin No. 507 will prove the need.

2. Franklin Automatic Driving Box Wedges to increase mileage and prevent delays and expense incident to lubrication troubles. Bulletin No. S-605 A tells the full story.

3. Tandem Main Rod Drive extends the piston thrust to another pair of drivers in proportion to the main boxes. Bulletin No. 876 carries diagrams and full information.

4. Franklin Lateral Motion Driving Box provides flexibility and prevents rail and tire wear. Bulletin No. 155 outlines all the other advantages.

These four major improvements are applicable to existing locomotives and are fundamental to operating conditions of today. They are worthy of your immediate authorization. Their application will help relieve unemployment and increase the reliability of long locomotive runs and the mileage between shoppings.

As in past business depressions, our railroads will join the movement to relieve distress caused by unemployment, even though it may mean financial hardship to do so.

Since this is the public's conclusion, why not make part of the expenditure for improvements that assure a financial return as well as one of good will?

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO
ST. LOUIS MONTREAL

The Canadian National's New Dining Car. It is 57 Feet Long, All Steel, and Seats 36 Passengers.

The Superlative Diner

THE "International Limited," the fast Canadian National train between Montreal, Toronto, and Chicago, carries as part of its equipment, the longest dining car ever built. The Canadian National placed its order for five of these cars with the Canadian Car & Foundry Co. of Montreal. The new diners are practically 57 feet long over the buffers and are all steel.

Design has been carefully worked out for beauty as well as for safety, comfort and convenience in the new equipment. A feature unique in diners is the interior panelling of highly figured English walnut. This, with the other furnishings, such as walnut chairs with the rounded backs, padded in green Scotch leather, and the modern lighting fixtures, transforms the diners into dining rooms rather than cars. There is a seating capacity of 36.

The heating of the cars is so arranged as to give uniform temperature in mild or cold weather. The piping is in single tier to allow a maximum inside width to the car and give the passengers the comfort of more knee-room. Intake and exhaust ventilators, two-speed coiling fans and six motor-driven fans in the side decking cars for ventilation and in the pantry, facilities for ventilation are greatly improved. Practically no wood is used in the construction of kitchen and pantry; partitions are made of steel, and lockers, plate racks and cupboards are of silveroid. Additional refrigerators and lockers have been provided.

Good Record on the Southern Pacific

Casualties to employes in train service on Southern Pacific Lines, as estimated per million locomotive-miles, decreased 35 per cent in the last ten years, according to R. J. Clancy, assistant to the general manager of the company.

The marked reduction in accidents, Clancy pointed out, was made despite a "comparatively good record in 1920." He declared the decade's achievement a "testimonial to the fidelity of officials and employes responsible for the safe operation of trains."

The Southern Pacific already has established a record of having carried more than 400 million passengers without loss of life by steam train accident during the last ten years. Commenting on the reduction of casualties among train employes, Clancy said:

"During the last ten years larger and more efficient freight locomotives and improved track facilities have made it possible to haul more cars per train, resulting in less train interference, less liability of collision between trains, and between trains and automobiles at grade crossings; fewer casualties to train-service employes and a faster average movement of traffic. In that time breaks-in-two on trains, always of concern to a locomotive engineer and train crew, were reduced 80 per cent on Southern Pacific Lines, and slid-flat wheels in freight service, another menace, more than 68 per cent. In a large degree the remedy has been found in supervision, instruction and maintenance."

Tube to Cost $67,000,000

Montreal is soon to effect one of the most important transportation improvement programs on the American continent, with the proposed new $67,000,000 rapid transit subway system scheme, according to J. Allan Bray, chairman of the executive committee. This scheme is to be taken up as soon as the new $50,000,000 Canadian National Railways' terminal is completed in the heart of the city. A part of the proposal engineers now are investigating is a method whereby elevated tracks would be eliminated in the commercial and business center.

The tube calls for the construction of long north-south and east-west subways for the rapid transport of passengers and enabling the Montreal Tramways to reduce the number of surface cars, which intensify congestion. Decision has not been made as to the method of financing, whether the municipality will construct the tubes and rent them to the company, or whether the city and company would jointly assume the expense; or, the company construct the tubes and the city guarantees the bonds. All these finance plans are now up for consideration. The project is progressing to a point where engineering obstacles are removed and the sole task is that of deciding upon the best method of financing the work.

Beg Pardon

The road over Tarrytown Heights, N. Y., is narrow, winding and none too smooth. Wesley Kornder motored homeward over it, he thought, to Yonkers early one morning. Suddenly a locomotive headed straight toward him. After the train had passed over his car the crew found him in the bushes, unhurt and wondering how he ever happened to mistake a railroad track for a country road.

SUCH LUXURY INVITES MORE FARES

THE Baltimore & Ohio Railroad first used these Hale & Kilburn No. 921 Double Rotating Reclining Chairs in Night Coach service between Washington and New York. They are deeply upholstered and spaced so that passengers can face them in any direction. A touch of the operating handle adjusts the reclining back to the exact position desired.

So successful was the first car equipped that additional B. & O. cars are now being fitted with them. The Union Pacific and the Chicago & Northwestern are adopting these supremely comfortable chairs for transcontinental service.

Not every railroad is prepared to purchase new luxury cars to improve traveling comforts. But, because passengers are more conscious of the seats than of any other comfort feature, it is perfectly good business to install Hale & Kilburn luxury chairs in EXISTING cars. Why not ask us to submit estimates?

HALE & KILBURN SEATS

A BETTER SEAT FOR EVERY KIND OF TRANSPORTATION

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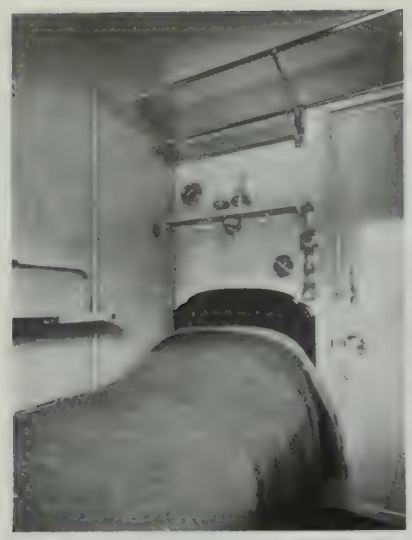
H. M. Euler, 53 1st St., Portland, Oregon.



The English Single Bed in New Sleeper. The Water Bottle Looks Dangerous.

New English Sleeping Cars

E. W. G.

RADICALLY different from any sleeping cars previously used on British railroads, two new cars were recently put into service by the London & North Eastern Railway on the Highland Man express, between London and Inverness. The cars were designed and constructed under the direction of H. N. Gresley, chief mechanical engineer of the road. The cars have an overall length of 63 feet 6 inches, the body below being carried on a steel underframe mounted on two standard L.N.E.R. four-wheeled compound bolsters 8 feet 6 inch wheel base bogies.

The body of the cars was built of teak. To minimize noise the space between the double floor and the inner and outer sheeting of the roof and the coach side was packed with asbestos felt. India rubber body pads were fitted between the body and the underframe to further remove noise caused by friction.

The general arrangement provides ten berths in pairs which may be converted into five double berths by means of communicating doors. Two entrance doors are provided at each outer end of the cars. The walls are finished in rag strippled blue paint shaded from a deep blue at the floor to white in the center of the roof, the whole effect being enhanced by giving the painted surface a highly glossy finish.

Each compartment has a bedstead, the bed head and foot of walnut. The bed has a box-spring mattress with a hair and wool overlay and blue blankets to match the color scheme of the compartment, and an embroidered bedspread. A white porcelain washbowl with a hot and cold water faucet is fitted in the corner near the window; a commode is carried on a pedestal beneath the basin. A large frameless mirror is placed centrally on the intermediate partition. A folding table is fitted below the mirror and a second folding table for a tray of food is also provided on the partition at the bed side. A shelf is provided above the bed. The top of the shelf, folding tables, and pedestal lid are covered with India rubber.

To eliminate blinds and curtains, a sliding shutter has been fitted inside each berth window. This is draught-proof, but does not interfere with the ventilating arrangements, and when not used slides into a pocket formed in the body side. The shutter is louvred, the louvres coming opposite the ventilator in the side window when the shutter is in the closed position. Each window is fitted with a frameless light which may be raised or lowered at will by merely turning a small handle without touching the shutter. The top portion of the window opening is also fitted with a glass louvre ventilator, the louvre of which may be set to suit the direction in which the train is traveling by means of a small handle above the center of the window. A double net rack is fitted above the bed head and a single rack at the foot. A 30-watt opal lamp, in the center of the ceiling, is equipped with a dimming device for night use. A reading lamp is fitted under the shelf over the bed head, with switches to control each light conveniently near the bed. Another lamp is enclosed in a nacrolac shade, over the mirror, the color of which matches the general color scheme. A coat and trousers hanger is provided on the partition over the bed. This is hinged so that it may be swung out when needed. The usual hat and coat hooks are fitted on the opposite partition. The doors are fitted with recessed handles and sliding bolts, as well as hooks and staples by which they may be fastened back. All metal fittings are chromium plated. The floor is covered with blue carpet of a shade to harmonize with the color scheme; the carpet is laid over sponge rubber to provide added comfort and to eliminate sound or vibration.

A steam-heated radiator is provided on the partition below the mirror, the regulator controlling this being placed near the bed head. An extractor ventilator is fitted in, with control lever near the other control fittings. A unique system of ventilation is provided in addition to that furnished by the window and extractor, a pressure system being used. A small nozzle is fitted on the partition above the shelf over the bed head, so arranged that it may be set to deliver cold, warm or hot air in the desired quantity and direction to suit the individual taste of the passenger. The air supplied each berth is drawn through a filter by a noiseless electric blower fan at one end of the corridor. Part of the air is passed through a heater fitted in the roof of the corridor. Plywood ducts are fitted, one for cold air and one for hot, the hot air duct being fully insulated to prevent so far as possible any loss of heat.

London & North Eastern's New Type 10-Berth Sleeping Car. It Has the Latest Private Bedrooms.

MADE BY RALSTON *Means*

BETTER MADE

BECAUSE

EVERY PIECE OF MATERIAL USED WAS CAREFULLY SELECTED AND TESTED—ONLY THE HIGHEST GRADE OF SKILLED WORKMEN, UNDER EXPERT SUPERVISION AND INSPECTION, WERE EMPLOYED ON THE JOB.

THE RALSTON STEEL CAR COMPANY

COLUMBUS, OHIO

BUILDERS OF FREIGHT CARS SINCE 1905

The Lehigh Valley's Freight Terminal and Industrial Building in Course of Erection.

The Lehigh Valley's Big Project

A FREIGHT and industrial terminal building 19 stories high is to be erected immediately for the Lehigh Valley Railroad Co., on property bounded by Twenty-sixth and Twenty-seventh streets and Eleventh and Thirteenth avenues, New York City. The structure will contain about 25 million cubic feet and upward of 1,750,000 square feet of floor area.

The building will have all the latest and most improved engineering and architectural features for a structure of this type. Several large elevators 30 feet by ten feet will operate in the building and will carry trucks of the largest capacity and size directly to any floor in the building. Any occupant of the warehouse will be able to load and unload his commodities on his own floor.

There will be no exterior columns excluding daylight, and all floors will have continuous windows on all sides, thus providing a maximum of daylight conditions.

The Lehigh Valley Railroad, through its system, will serve the building. The warehouse will be in the heart of the railroad and steamship terminals of Manhattan Island.

Starrett Brothers & Ekon, who will erect the building, will start work at once. Russell G. Cory is the architect and engineer.

But No Interest?

After traveling around over the country for the last 19 years, P. D. Hough went to the Pennsylvania Railroad offices at Toledo the other day to claim pay for a day's work done in 1911. After working for one day as a locomotive fireman, Hough left the railroad without collecting his wages. Pennsylvania Railroad officials looked up the records when he presented his claim, found it was correct and settled a claim that probably sets a record for back pay. Hough received a check for $2.75 for his day's work.

Hamilton's New Terminal

The Toronto, Hamilton & Buffalo Railway Co., the Canadian Pacific's route into the Bison City, is to expend $3,000,000 on one of the most comprehensive station projects, which involves elimination of seven street grade crossings and removal of tracks from one of the main streets of the city. Coupled with the building of the station is the raising of the tracks and eliminating hazards of level crossings. A general description of the project by H. T. Malcolmson, vice president of the railway, shows that tracks are to be raised above existing location from the tunnel portal eastward 7,200 feet. This permits underpassing all important streets. There will be likewise some shifting of the tracks in alignment releasing the bed of Hunter street from railway occupation and restoring the street as an important thoroughfare for motor traffic passing the new terminal.

The new station structure will be of monumental proportions and of striking silhouette, with the dominant feature an imposing tower 140 feet high. The architectural setting will be improved by an ample plaza on the north side where Hunter street will be diverted around the station in a sweeping curve. Mail, express and baggage departments will be located on the south side opposite the station with a connecting subway under the tracks.

Bridge Men Hear About Net Return

W. R. Cole, president of the Louisville & Nashville Ry., speaking to the 40th yearly meeting of the American Railway Bridge & Building Association at Louisville, October 21-23, said: "The Transportation Act of 1920 was heralded as marking the beginning of a new day because for the first time it was recognized that the railways are entitled to a fair return. The Interstate Commerce Commission was instructed to so regulate rates that the roads would be enabled to earn this return."

The roads had not attained this return, Mr. Cole said. He regretted that the commission, ordering rate reductions, had failed to give proper attention to conditions now confronting the railroads. Mr. Cole spoke also of unsatisfactory valuation methods of the commission which has not, he believed, attached sufficient importance to growing competition.

The convention was presided over by J. S. Huntoon, president, who is assistant bridge engineer for the Michigan Central. The report of the secretary, C. A. Lichty, showed there are 714 members in the association. These officers were elected for the new year: President, C. S. Heritage, bridge engineer, Kansas City Southern, Kansas City, Mo.; first vice president, A. I. Gauthier, assistant division engineer, Boston & Maine, Concord, N. H.; second vice president, H. I. Benjamin, assistant bridge engineer, Southern Pacific, San Francisco; third vice president, W. T. Krausch, engineer of buildings, Burlington, Chicago; fourth vice president, T. H. Strate, engineer track elevation, C.M.St.P.&P., Chicago. The association is to meet next at Toronto, Ontario, October 20-22, 1931.

"The contented business executive gets that way by keeping his eyes shut."—*Henry Ford.*

Said the historian Gibbon: "I never make the mistake of arguing with people for whose opinions I have no respect."

THE TEST OF TIME

The economical value of a device which automatically couples air, steam and signal hose is readily apparent to discerning railroad officials. But to be completely satisfactory such a device must prove itself practical and present a record of successful operation under all track and climatic conditions.

Surely an automatic connector that has been developed and perfected in actual train service over a period of fifteen years must have much to recommend it—and such is the AMERICAN AUTOMATIC CONNECTOR.

Not only has the AMERICAN AUTOMATIC CONNECTOR successfully withstood the test of time, but it has to its credit more than 150,000 train miles of service over the large railroads of the United States without a single delay directly attributable to the connector.

May we send you further information?

THE CONSOLIDATED CONNECTOR CORPORATION
118 Noble Court • Cleveland • Ohio

The News of the Month

FOR THE first nine months this year, Class I roads in the United States had a net railway operating income of $659,427,561, which was at the annual rate of return of 3.54 per cent on their property investment, according to reports filed by the carriers with the Bureau of Railway Economics and made public Nov. 6. In the nine months of 1929, their net railway operating income was $962,854,453, or 5.29 per cent on their property investment.

Property investment is the value of road and equipment as shown by the books of the railways, including materials, supplies and cash. The net railway operating income is what is left after the payment of operating expenses, taxes and equipment rentals but before interest and other fixed charges are paid.

This compilation is based on reports from 171 Class I roads representing a total of 242,609 miles.

Gross operating revenues for the first nine months totaled $4,082,725,729 compared with $4,781,684,238 for the same period last year, a decrease of 14.6 per cent. Operating expenses for the first nine months amounted to $3,052,543,100 compared with $3,419,397,035 for the same period one year ago, a decrease of 10.7 per cent.

Class I roads in the first nine months paid $276,892,644 in taxes, compared with $308,953,847 for the same period last year, a decrease of 10.4 per cent. For September alone, the tax bill amounted to $31,989,991, a decrease of $6,273,995 under September, 1929.

Seventeen Class I railroads operated at a loss in the nine months of 1930, of which six were in the eastern, two in the southern and nine in the western district.

Revenue Loading a Little Higher

Loading of revenue freight for the week ended on October 25 totaled 959,335 cars, the car service division of the American Railway Association reports. This was an increase of 28,250 cars above the preceding week this year but a reduction of 175,025 cars below the same week last year and a reduction of 203,639 cars below the same week in 1928.

Miscellaneous freight loading for the week of October 25 totaled 366,230 cars, 86,597 cars under the same week in 1929 and 90,412 cars under the same week in 1928.

Loading of merchandise less than carload lot freight amounted to 240,008 cars, a decrease of 30,406 cars below the same week last year and 30,012 cars below the same week two years ago.

Grain and grain products loading for the week totaled 41,517 cars, a decrease of 1,496 cars under the week in 1929 and 11,553 cars below the same week in 1928. In the western districts alone, grain and grain products loading amounted to 28,727 cars, a decrease of 1,333 cars below the same week in 1929.

Live stock loading totaled 35,361 cars, 3,411 cars under the same week in 1929 and 2,658 cars under the corresponding week in 1928. In the western districts alone, live stock loading amounted to 28,382 cars, a decrease of 3,074 cars compared with the same week last year.

All districts reported reductions in the total loading of all commodities, compared not only with the same week in 1929, but also with the same week in 1928.

I.C.C. Suspends Fare Increases

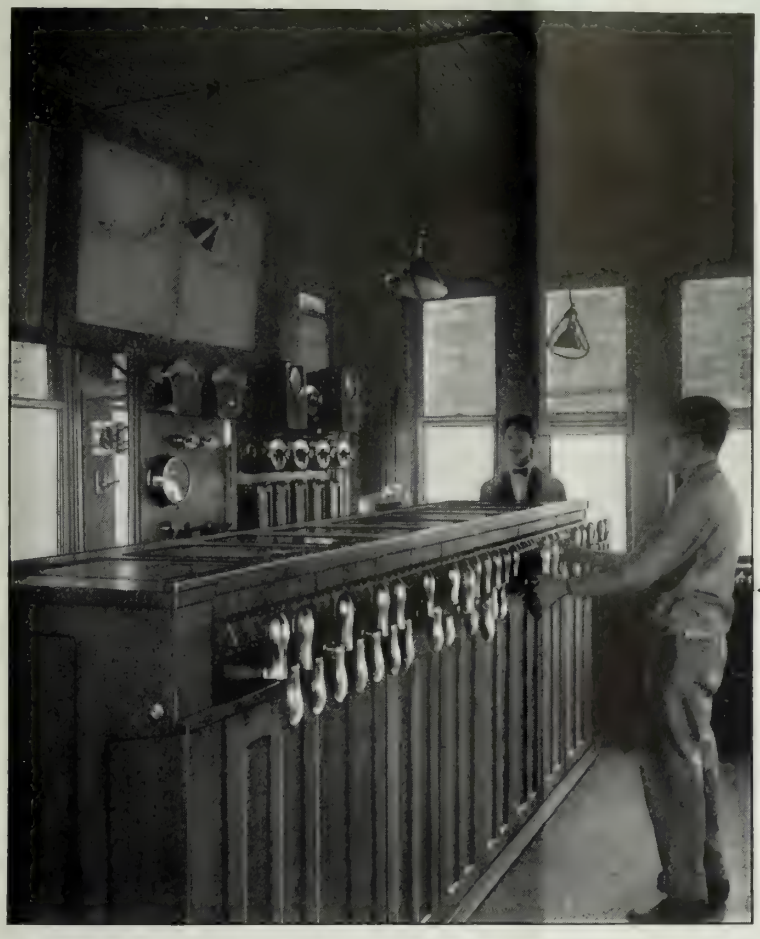
Plans of the Lackawanna to increase by approximately 25 per cent the cost of its 60-trip commutation passenger fare booklets for transportation between New York City and 86 cities in northern New Jersey, received a temporary setback at the Interstate Commerce Commission on Oct. 30 when the commission suspended the schedules proposing the increases from Nov. 1 to June 1. The suspension of the proposed increased commuter fares followed receipt by the commission of protests from commuters and civic organizations affected by the proposed change. The increased fares were to have become effective on Nov. 1, but will now be invested by the commission at hearings to be had in New Jersey at some future date yet to be set.

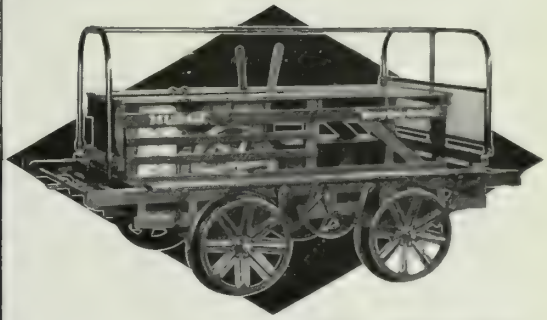
Relief Rate Limit Nov. 30

The railway managements have decided not to extend beyond November 30 the emergency reduction in freight rates placed in effect for the relief of agricultural interests due to the drought. The following statement was authorized Nov. 10 by eastern, western and southern railway executives:

Protracted drought in Alabama, Arkansas, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Montana, New Mexico, North

RESPONSIBILITY





WS2—Heavy Duty Section Car—8-12 h.p.
Seats 10 men—weighs 1040 pounds

MAN'S responsibility extends no further than the dependability of his equipment. A truth the Railroad World recognizes by providing only what has been found the best in actual service.

In Motor Cars this means Fairmont. For 20 years, that name has meant unfailing performance in all kinds of weather, for "the men along the line." And on the maintenance books in the office, that name has consistently stood for Lowest Over-All Cost, considering every factor from purchase price to depreciation. These are FACTS, based, not on isolated cases, but on the great majority! For over half the motor cars in use today are Fairmont products.

The finer the record, the greater is the responsibility to maintain it. Fairmont Motor Cars must deliver Lowest Over-All Cost or the makers are not satisfied.

FAIRMONT RAILWAY MOTORS, INC.

FAIRMONT, MINNESOTA, U. S. A.

General Sales Offices: 1356 Railway Exchange Bldg., CHICAGO

District Sales Offices: New York City Washington, D. C. St. Louis San Francisco New Orleans

FAIRMONT RAILWAY MOTORS, Ltd., Toronto, Canada *Foreign Representative:* BALDWIN LOCOMOTIVE WORKS

Manufacturers of section motor cars, inspection motor cars, gang and power cars, weed burners, ballast discers, ball and roller bearing engines, push cars and trailers, roller axle bearings, wheels, axles and safety appliances

Fairmont Mudge — Performance on the Job Counts

THE · RAILROAD · WORLD · KNOWS · FAIRMONT

Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, Virginia, West Virginia and Wyoming, prompted the President of the United States to take steps to relieve the farmers in those areas whose crops had been destroyed and who were confronted with still further losses of live stock because of a lack of feed and water. As a major part of his program of relief, the President appealed to the railroads to make reductions of their rates on hay, straw, feed and water into and live stock out of these areas. The railroads willingly cooperated with the President by filing with the Interstate Commerce Commission tariffs which reduced rates on these commodities 50 per cent in eastern and southern territories and 33 1-3 per cent in the western territory effective in all territories the latter part of August. October 31 was named as the date upon which they would expire. They were extended later to November 30. By November 30 in excess of 60,000 carloads will have been moved under the reduced rates. This represents a greater tonnage than ever moved in any relief measures heretofore undertaken in this country. The revenue loss to the carriers from this traffic cannot now be ascertained but certainly will aggregate several million dollars and such a drain on the revenues cannot longer be continued.

October Earnings Drop

Railroad earnings for October will continue to run below last year, judged by figures made public November 11.

The Chicago & Alton showed a net loss of $287,525, after taxes and charges, in October, against a net loss of $57,290 for October, 1929. For the first ten months of 1930 Chicago & Alton's net loss aggregated $3,382,166, compared with $697,748 in the corresponding 1929 period.

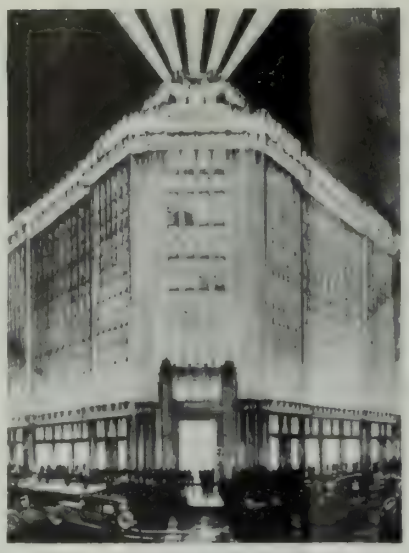
Net operating income of the Milwaukee for October, according to preliminary estimate, aggregated about $2,284,000, a drop of some $1,251,000 from the same month in 1929.

Chicago, Burlington & Quincy's October net operating income is estimated at about $3,600,000, as compared with $4,531,386 in October, 1929, a decrease of about 20 per cent.

Stock Show Nov. 29

The fifth annual live stock show and rodeo at Los Angeles will be held November 29 to December 6 at the Los Angeles Union Stock yards.

J. A. McNaughton, executive director, reports that entries of blue-blooded cattle are already promised from 18 states, including sections as far east as Delaware and Florida and as far north as Oregon and Washington.



Spanish-American Electric Co. Building to be Erected in Buenos Aires.

An outstanding feature of this year's show will be the Hereford division. Indications are that 20 or more of the famous herds in the Middle West will compete for the prize money. More than 100,000 persons attended the show last year.

United Engineers in the Argentine Capital

United Engineers & Constructors, Inc., has been authorized by Compania Hispana Americana de Electricidad, Buenos Aires, to build a ten-story display and office building in the Argentine capital, to cost $2,000,000. This company, known as the "Chade" Company, is a leading public utility serving Buenos Aires and the surrounding territory with power and light. The building will be one of the most important and largest in the city, and with its floodlighting and aurora of strong lights playing from the top, will be one of the showiest. It will contain showrooms of the company, principal offices, garage, and six stories of offices to be rented, and a large public restaurant, cafeteria for employes of the company, lecture and demonstration rooms.

Construction will be of steel and brick with granite and French stone exterior. The location, at the junction of the Avenida Presidente Rocque Saenz Pena and Calle Congallo and Calle Esmeralda, is one of the most important in Buenos Aires.

U. P. to Build Warehouse

A million dollar warehouse, to be the most modern in the West, is to be built at Ninth and Alameda streets, for the Overland Terminal Warehouse Co. of Los Angeles, a subsidiary of the Union Pacific System. The building will provide a floor space of 434,000 square feet. Contracts have been awarded to the J. V. McNeil Co., builders, and Samuel H. Dunford, architect and engineer. Construction will begin as soon as the state commission issues the necessary certificate. Officers of the new formed organization are Union Pacific officials. F. H. Knickerbocker is president; Mr. Robertson, vice president; C. H. Bloom, secretary; C. C. Barry, auditor, and W. F. Truelson, treasurer.

The warehouse will be a six-story structure with full basement of steel and concrete construction with an exterior of stucco. The first floor of the Alameda street side will be used for stores, telegraph offices, and other business engaged in facilitating warehouse and storage activity. On the floors above provision will be made for offices of brokers and manufacturers, agents and jobbers, to be served by high speed passenger elevators. The floor space will be divided into 22,900 square feet for offices; 6,760 square feet for stores; 150,000 square feet for general warehousing and 254,340 square feet for leasing. There will be seven heavy duty freight elevators capable of handling the largest freight shipments and motor trucks. Railroad trackage will be so arranged that 26 freight cars can be spotted at the building at one time.

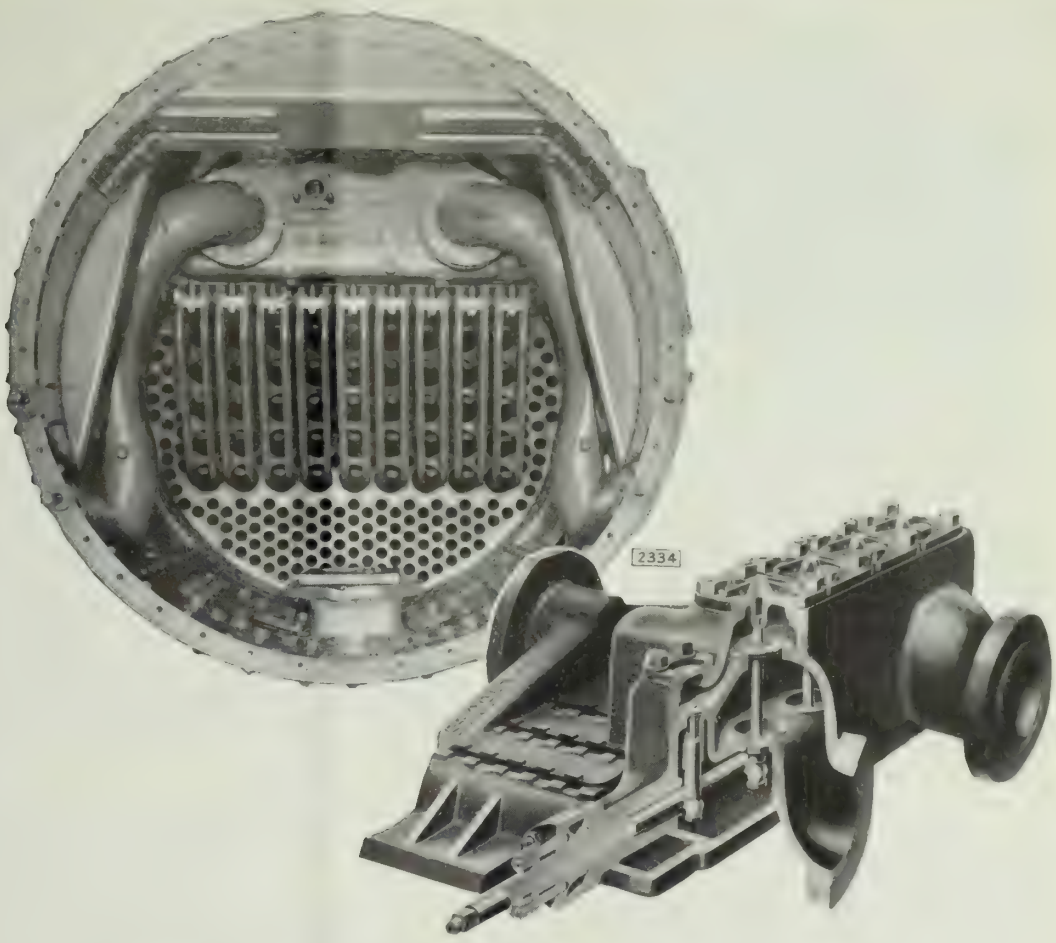
Short Time to Honolulu

A travel service that will bring Honolulu within seven and a half days of New York was announced Oct. 26. It will be provided by the New York Central in combination with western railroads and the Matson Steamship Line.

It is planned to operate three de luxe "boat trains" between the Atlantic and the Pacific without change of cars in the record time of three and a half days. They will connect at San Francisco with the Malolo, which makes the run to Honolulu in four days. They will leave New York and other eastern cities Jan. 20, Feb. 3 and Feb. 17.

A Research Laboratory

The Welding Engineering & Research Corpn., with general offices and research laboratory in New York City is organized to cooperate with industry in the safe and economical applications of welding and cutting, and in the more rapid growth and development of the industry. The company's activities include engineering, research, consulting, inspection, supervision and certification. Some of the specified applications of these activities are: survey of a plant or industry to determine the processes which should be utilized, and their extent; recommendations on, or the development



A Single Unit

The American multiple throttle is cast integral with the superheater header, the logical place for the throttle. This results in a snug, compact unit, and when installed both are in place.

This single unit saves weight and avoids additional joints in the smokebox. There are no bolts, pins or cotters within the throttle thereby lessening the possibility of failure and reducing the cost of maintenance.

The American multiple throttle is a well balanced, easy working unit that specially meets all the requirements of easy, positive control of modern power.

May we submit further details?

AMERICAN THROTTLE COMPANY, Inc.

60 East 42nd St.
NEW YORK

Peoples Gas Building
CHICAGO

Canadian Representatives:
The Superheater Company, Limited, Montreal

A-468

The National Lock Washer Co. Advertised so Consistently That It Had to Erect This Enlarged Plant.

of, welding and cutting organizations and equipment; preparation of plant layouts; preparations of plans of welded designs, and kindred undertakings calling for expert advice.

Larger Plant for National Lock Washer

A thoroughly modern, four-story, fireproof, reinforced concrete structure has been added to the plant of the National Lock Washer Co., at Newark., N. J., to care for largely increased business in the sales of old and new products. But, in addition to giving the company more space the building is a testimonial to the wise determination of the directors to contribute just as much as possible to what should be a national attitude overcoming the present feeling of depression in business. To the extent possible the company provided employment for numbers of men, and orders for other manufacturers of the materials entering into the new structure.

The building covers a gross area of 50,000 square feet and contains a completely equipped shop for the production of car window equipment and marine speedometers, and the machining of drop forgings. Drafting rooms, first-aid stations, and a modern cafeteria are also included. A feature in the construction is the use of the inverted girder form of floor supports along the outer walls. By suspending flooring from these outer girders, the builders were able to install the glass siding or windows for the full height of the wall. This affords greater light spread in the working space. On each floor the "solarium" effect is carried out for three sides of the building, with service units set in the center of the structure. Monks & Johnson of Boston were the architects and engineers, and the Shore Construction Co., the builders.

Ben Campbell to Retire

Having placed the name of Ben Campbell, vice president of the New Haven, in the imperishable sanctity of Little Stories we learn, as we go to press, that he is to retire Dec. 1 after 23 years' service. Mr. Campbell is to remain with the company in an advisory capacity.

Armistice Day Wisdom

The Interstate Commerce Commission announced November 11 it had voted to deny all petitions of western railroads asking reopening of the western grain case. Opening of the case had been requested by virtually every western trunk line railroad on the ground the new rates would result in a loss in revenue of between $10,000,000 and $12,000,000.

Rolling Stock Survey

An extremely valuable booklet comes from the Timken Roller Bearing Co. this month, entitled "A Survey of Railway Rolling Stock," by Walter C. Sanders, general manager for that company's railway division at Canton, Ohio. The booklet is a reprint of the material as it appeared in the September-October issue of the Military Engineer. The author has made a most complete survey of railroad rolling stock from the beginning, a hundred years ago, to the present day, with illustrations. These pictures, forming the sharpest contrasts in equipment, make the booklet unusually interesting in the historical sense. Doubtless the Timken company will be pleased to supply copies to inquirers; at least it is to be hoped that such is the case. Such material should have wide distribution. It is the kind of information particularly suited to high schools and colleges, especially in the classes studying history or, in the higher institutions, transportation.

Chicago Pneumatic New Building

What is believed to be the finest and most completely equipped service station in the portable tool industry has recently been erected by the Chicago Pneumatic Tool Company at 570 East Larned St., Detroit, Mich. The building is reinforced concrete, faced with tapestry brick in assorted shades as a pleasing background for the limestone trim. The 75-foot front has two large plate glass display windows, each 13 ft. wide by 7 ft. high containing the various CP products, illuminated at night by concealed display lights. The building contains approximately 12,000 ft. of floor space with two stories and a basement. The east half of the first floor of the building serves as a warehouse for compressors, engines and other heavy machinery, while the west half houses the parts storage, a sound proof test room, a 35 ft. repair bench, shipping and receiving benches, delivery counter, etc. The office occupies the front half of the second floor, the balance being devoted to storage of complete tools. The equipment is modern throughout and assures users of CP products in the Detroit district of the best and quickest service it is possible to provide. This is one of 20 similar fully equipped and stocked service stations maintained by the Chicago Pneumatic Tool Company in important cities throughout the United States and a cordial invitation is extended to all who visit Detroit to inspect this new and thoroughly modern building.

How Come?

Authority has been granted the Texas & Pacific to reduce its passenger rate from 3.06 to two cents a mile on 267 miles of line between Fort Worth and Big Springs to meet motor bus competition.

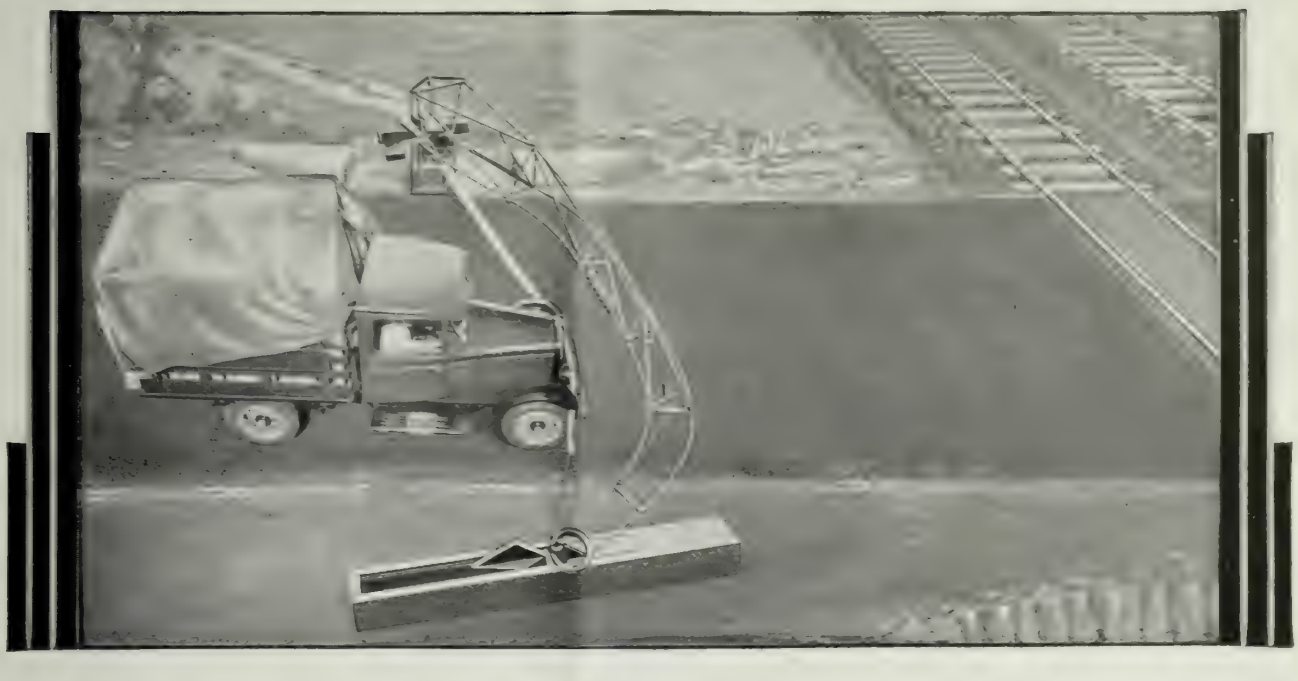
Buses

The Twin Coach Corpn. reports that the largest volume of business for any one month during its history was recorded during September, when the value of deliveries amounted to more than $500,000, a gain of $100,000 or 30 per cent over the same month last year.

Recent deliveries reported are: from the A. C. F. Motors Co. to the Alton Transportation Company, one 21-passenger parlor coach; Capital Traction

And Here's Another. The New Service Station of the Chicago Pneumatic Tool Co., Detroit.

THE HIGHWAY GUARDIAN...



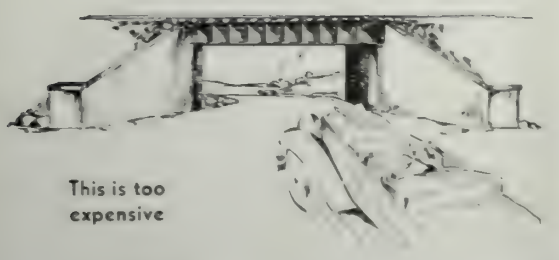
throws a new light on Grade Crossing Protection....

FOR years it has been thought that grade separation was the only complete method of preventing crossing accidents. But high costs have defeated the effectiveness of this means of keeping trains and motorists apart.

Not until the development of THE HIGHWAY GUARDIAN was there a method of protection that could be put into immediate service for an expenditure low enough to permit its use throughout the country.

Unlike the grade separation, the installation of THE HIGHWAY GUARDIAN leaves grades and adjacent property unchanged. It fits in with existing conditions and forcibly stops cars, trucks or buses whose drivers attempt to pass at times of danger. Installation is simple, quick and costs are but a fraction of the expenditure required for grade separation.

To secure thorough protection *NOW* for the millions of cars traveling the highways, install THE HIGHWAY GUARDIAN. It meets today's requirements at the lowest cost per crossing.



This is too expensive

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

Co., Washington, D. C., one 33-passenger parlor coach; Illinois Power & Light Co., two 25-passenger parlor coaches; Missouri Pacific Transit Co., four 29-passenger parlor coaches; from the Mack-International Motor Truck Corpn. to the Atlanta & St. Andrews Bay R.R. Co., three model AB 23-passenger sedans; Brawley Union High School, Brawley, Cal., one model BG 231-in. bus chassis; Conley School District, Taft, Cal., one model BC 231½-in. bus chassis; Deere Brothers, Wilkinsburg, Pa., one model BG 192½-in. bus chassis; European Dist. of Mack Trucks, Perth Amboy, N. J., one model BK 265-in. bus chassis; Georgia-Florida Motor Lines, Inc., two model BK, 29-passenger interstate buses; Jamaica Central Ry., Jamaica, N. Y., three model AB 29-passenger city type buses; New Kensington Taxicab Co., New Kensington, Pa., one model BG 231-in. bus chassis; Oceanside-Carlsbad Union High School, Oceanside, Cal., one model BG 210-in. bus chassis; Placentia Union Grammar School, Brawley, Cal., one model BG 210-in. bus chassis; Service Stages, Inc., two BC interstate type buses; G. Lester Smith, Geneva, N. Y., one model BG 192½-in. bus chassis; Tomas & Cia, Boston, 30 model AB 230-in. bus chassis; Utah Light & Traction Co., Salt Lake, one model AB 230-in. bus chassis; Charles Vollmer, Amsterdam, N. Y., two model BC 29-passenger city type buses; F. W. Weller, New Rochelle, N. Y., one model BG 192-in. bus chassis; Wyoming Valley Autobus Co., Wilkesbarre, Pa., five model BC 29-passenger city type buses; from the White Company to the Louisville Railways, Louisville, two model 65A buses; from the General Motors Truck Co. to the Memphis Street Ry., Memphis, five type U-21 Yellow coaches; Mississippi Valley Public Service Co., Milwaukee, four type W-21 Yellow coaches; and the Virginia Electric & Power Co., Richmond, Va., five type U-21 Yellow coaches. The Indiana Service Corpn. is inquiring for 25 interurban cars.

Locomotives

Reports of carriers filed with the American Railway Association show that on October 15 on Class 1 railroads 5,005 locomotives were in need of classified repairs or nine per cent of the number on line. This was an increase of 240 above the number in need of such repairs on October 1, at which time there were 4,765 or 8.6 per cent. On the same date Class 1 roads had 7,618 serviceable engines in storage compared with 7,997 on October 1.

There were placed in service in the first nine months of this year 632 new locomotives as against 540 for the same period last year.

New locomotives on order October 1 totaled 181 as against 354 the same day last year.

According to the department of commerce, October shipments of locomotives from various plants totaled 50 compared with 65 in September and with 96 in October, 1929; and for the first ten months of 1930, shipments aggregated 667 locomotives compared with 688 the same period of 1929.

Reports of the American Locomotive Co. show that on October 27, unfilled orders totaled about $12,000,000 compared with $17,834,363 on January 1, 1930, and $15,472,848 on July 1, 1930.

October shipments from the Baldwin Locomotive Works (excluding subsidiaries and affiliated companies) totaled $2,770,000 compared with $3,460,000 for October, 1929. Total for the ten months of 1930 was $28,920,000 compared with $20,830,000 for same period 1929. On November 1, 1930, unfilled orders totaled $6,800,000 compared with $8,803,000 on October 1, 1930.

Inquiries for equipment reported since the October issue of Transportation have been reported as follows: Chicago & Illinois Midland for four or five 2-10-2 type and one 2-8-2 type; Duluth, Missabe & Northern for three locomotive tenders; Inland Steel Co. for two 6-wheel switching locomotives.

Orders for locomotives recently have been placed as follows: Canadian National Rys., two 4-6-4 type; Coos Bay Lumber Co., one 2-8-2 type with the American Locomotive Works; Chicago Great Western, six 2-10-4 type with the Lima Locomotive Works.

Passenger Cars

The following inquiries for passenger cars and equipment have been reported: Santa Fe, 16 gas electric motor cars and 10 horse-express cars; New York Central, two multiple unit car bodies and trucks.

Freight Cars

Reports of carriers to the American Railway Association show that October 15 class 1 roads had 156,127 freight cars in need of repairs or seven per cent of the number on line. This was a decrease of 1,014 below the number in need of repairs October 1, when there were 157,141 or 7.1 per cent.

Freight cars in need of heavy repairs October 15 totaled 111,324 or five per cent, an increase of 132 over October 1, while freight cars in need of light repairs totaled 44,803 or two per cent, a decrease of 1,146 under October 1.

Class 1 roads placed in service 70,033 new freight cars in the first nine months this year, against 59,929 placed into service in the same period of 1929.

Of the new freight cars installed 36,404 were box cars, an increase of 8,119 over the first nine months of 1929. Also there were 25,785 new coal cars placed in service in the first nine months this year, an increase of 3,860 over the same period last year. During the same period the roads installed 3,343 flat cars, 3,425 refrigerator cars, 738 stock cars and 338 miscellaneous cars.

October 1, this year, the railroads had 6,764 freight cars on order compared with 29,481 on the same date last year, and 7,522 on the same date two years ago.

October 23 there were 401,659 surplus freight cars in good repair and immediately available for service. This was an increase of 5,368 over October 15, when there were 396,291.

Surplus coal cars totaled on the same date 130,623, a decrease of 2,240 within about a week, while surplus box cars total 223,660, an increase of 8,727 for the same period.

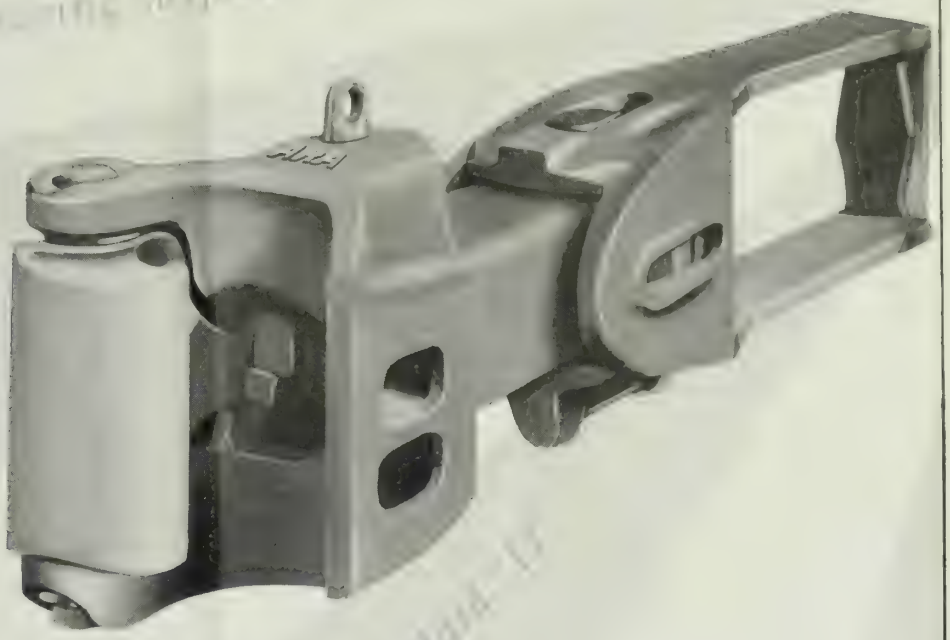
Reports also showed 22,425 surplus stock cars, an increase of 385 above the number reported October 15, while surplus refrigerator cars totaled 5,907, a decrease of 1,535 for the same period.

The Santa Fe reported recently that it will buy 1,000 box, 500 refrigerator, 22 cabooses and 10 drover's cars.

Inquiries for freight cars reported since the October issue are: Ferrocarril al Pacific (at San Jose, Costa Rico), 25 cattle cars; Great Lakes Steel Corpn., a subsidiary of the National Steel Corpn., 50 box; New York Central, 20 multiple unit car bodies; Pacific Fruit Express, 600 steel underframes; United Fruit Co., 25 steel fruit cars for Tela Railway; Virginian Railway for rebuilding of 500 55-ton hopper cars.

Recent orders include a statement by the Baltimore & Ohio that it will build 1,000 steel box cars and 1,000 heavy duty gondolas, to be built in Baltimore and in the shops along the line. A statement from the Pennsylvania that it will build 1,500 steel gondolas (500 at Enola, 500 at Altoona, and 500 at the Pitcairn shops); Anglo-Chilean Consolidated Nitrate Corpn., 50 air dump cars from Magor Car Co.; Baltimore & Ohio, 1,000 box cars from the Standard Steel Car Co.; Hercules Cement Corpn., 10 cement cars from Standard Steel Car Co.; Illinois Terminal R.R., 15 steel underframes from the American Car; Maine Central, five hopper cars from the Standard Steel Car Co.; Wheeling Steel Corpn., 20 gondolas from the Pressed Steel Car Co.

American Radial Coupler



AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

Railway Construction

Tracks & Yards

CANADA.—Saskatchewan. The Canadian Pacific has let the following contracts for 100 miles of branch line here: completion of the line from Nipawin to Henribourg, 20 miles, to Fred Mannix, Calgary, Alta.; Rosetown to Gunnworth, 20 miles, to Foley Bros., Winnipeg, Man.; Medstead to Meadow Lake, 35 miles, to Fred Mannix; Hamlin, northeasterly, 25 miles to Roosa & Wickstrand, Vermillion, Alta.

FLORIDA.—The Atlanta & St. Andrews Bay Ry. Co. has asked permission to build a 4½-mile extension at Panama City, from Milliville Junction to Bay Harbor.

OREGON.—The Spokane, Portland & Seattle has let a contract to the Hauser Construction Co., Portland, for track laying for the 29-mile extension of the Oregon Electric from Lebanon into the Calapooya Valley. A contract for ballasting has been let to the Meyers Contracting Co.

PENNSYLVANIA. — The Donora Southern has let a contract to the Vang Construction Co., Cumberland, Md., for six miles of line at Monongahela, connecting with the Pittsburgh & West Virginia's 38-mile Connellsville extension, to cost about $1,200,000.

TEXAS.—The Santa Fe has let a contract to Sharp & Fellows, Los Angeles, for a branch line from Heaton, southwest, about 8½ miles.

WASHINGTON.—The Interstate Commerce Commission has authorized the Northern Pacific and the Union Pacific, through the Oregon-Washington R.R. & Navigation Co., to build a 60-mile branch line in Grays Harbor and Jefferson counties, from Moclips north to the Hoh River, about six miles northeast of Spruce postoffice. The O.R.&N. has permission to operate over the Northern Pacific between Hoquiam and Moclips to reach the branch line. The line will serve timber lands. It is to cost about $6,000,000.

Buildings & Structures

ALABAMA.—Birmingham. The Louisville & Nashville has let a contract to the Johnson Construction Co., Birmingham, for a yard office, a service building and a signal tower here.

B.C.—Vancouver. The Canadian Pacific is receiving bids for a tunnel from Burrard Inlet to the yard at Flase Creek to eliminate six street crossings and for placing a two-foot reinforced concrete lining. The tunnel will be 4,609 feet long and cost about $1,750,000.

—Colebrook. The Great Northern has let a contract to the Western Bridge Co., Vancouver, for the superstructure and machinery for a 186-ft. deck plate girder swing bridge near here.

CALIFORNIA.—San Francisco. The Santa Fe is planning to build a 319-acre industrial terminal fronting on the Richmond inner harbor of the bay. The project involves the filling of 162 acres of submerged land.

CANADA.—Hamilton, Ont. The Toronto, Hamilton & Buffalo with the cooperation of the city is planning to build a passenger station and various grade separation structures here. Plans are now before the board of railway commissioners.

—East Windsor, Ont. The Canadian National has let a contract to the Canada Paving & Supply Corpn., Windsor, for an underpass to cost about $178,000. The total amount of the project is about $285,000, part of which will be paid by the city.

LOUISIANA. — New Orleans. The Gulf, Mobile & Northern is planning to build a terminal here to cost about $1,250,000. The facilities to be built include trackage, an enginehouse, a car repair shop and machine shop for locomotive repairs.

—New Orleans. The Southern Pacific has asked permission to build a perishable fruit and vegetable terminal here to cost about $900,000.

MARYLAND.—Baltimore. The Pennsylvania will begin immediately to build a produce terminal on the site of the old Mt. Vernon shops here to cost about $750,000. The capacity of the proposed yards will be about double that of the present facilities. The plans also call for a modern brick office and warehouse.

MISSOURI.—St. Louis. The Missouri Pacific has let a contract to the Kellerman Contracting Co., St. Louis, for a three-story concrete brick and steel interlocking tower on Carroll street, near the southern railway approach to the Municipal bridge.

NEW YORK.—New York. The New Haven has let a contract to the Austin Company, Cleveland, for a warehouse on the company's property in the Bronx, to cost about $250,000.

OHIO.—Toledo. The New York Central is building new facilities at Stanley Yard to cost about $1,400,000. The plan is to convert the existing flat freight yard into a hump yard with car retarder operation. A contract has been let to the Walsh Construction Co., Davenport, Iowa, for grading and track building.

—Columbus. The Pennsylvania has let a contract to Boyajohn & Barr, Columbus, for structural additions, alterations, and a train concourse and umbrella sheds at the Union passenger station. A contract for rearrangement of tracks and platforms and a drainage system has been let to the Fritz-Rummer Co., Columbus. The work is being done in conjunction with the Big Four, joint owner of the station.

—Cleveland. The Big Four has let a contract to the Industrial Construction Co. for a grade separation structure at Forty-first street, to cost about $200,000.

—Leavittsburg. The Baltimore & Ohio, the Erie, and the Northern Ohio Power & Light Co. will eliminate two grade crossings here to cost about $300,000.

OREGON.—Rowena Point. The Oregon-Washington R.R. & Navigation Co. has let a contract to the J. F. Shea Contracting Co. for a double track tunnel here to cost about $190,000.

PENNSYLVANIA.—Johnstown. The Baltimore & Ohio is planning to build a passenger and freight terminal here to cost about $450,000.

—Erie. The Pennsylvania has let a contract to the Rust Engineering Co., Pittsburgh, for an addition to the grain elevator here to cost about $400,000. The new addition will bring the elevator up to 3,000,000 bushels.

—Royersford. The Reading is planning to build a brick and terra cotta passenger station and a brick freight station here.

TEXAS.—McAllen. The Missouri Pacific has let a contract to the W. A. Velten Construction Co., Brownsville, for a one-story brick, tile and concrete warehouse here.

VIRGINIA. — Lambert's Point. The Norfolk & Western has let a contract to J. P. Pettijohn & Co., Lynchburg, Va., for extensions to its freight terminals here to cost about $200,000.

—Clifton Forge. The Chesapeake & Ohio has let a contract to J. A. Fix & Sons, Lynchburg, for improvements to its locomotive shops here to cost $153,460.

WEST VIRGINIA. — Harper's Ferry. The Baltimore & Ohio is building a bridge across the Potomac River to replace the former span here. The bridge will be 1400 feet long with 11 deck plate girder spans requiring about 4,400,000

pounds of steel and 4,000 cubic yards of concrete. The cost will be about $800,000.

WISCONSIN.—Milwaukee. The Milwaukee has let a contract to Bentley Bros., Inc., Milwaukee, for a waste reclamation plant here for extracting oil and grease from used journal box waste. The Journal Box Servicing Corpn., Indianapolis, will supply the equipment. The entire cost of the plant will be about $100,000.

Changes in Personnel

Executive & Operating

Milwaukee announces the following changes in divisions and personnel: The Chicago & Milwaukee, the Racine & Southwestern, and the Northern divisions have been combined and will be known as the Milwaukee division; the Illinois & Dubuque divisions will be known as the Illinois & Dubuque division; **N. A. Ryan** has been appointed superintendent of the Milwaukee division with headquarters at Milwaukee; **L. F. Donald** has been appointed superintendent of the Dubuque & Illinois division with headquarters at Savanna, Ill.; **H. F. Gibson** has been appointed superintendent of the Milwaukee terminals with headquarters at Milwaukee, succeeding Mr. Ryan; **J. H. Valentine,** appointed superintendent of the Terre Haute division with headquarters at Terre Haute succeeding Mr. Donald; **E. A. Meyer,** appointed superintendent of the Superior division with headquarters at Green Bay succeeding Mr. Valentine; **P. H. Nee,** appointed superintendent of the Kansas City division succeeding Mr. Gibson; **H. M. Gillick,** appointed superintendent of the Hastings & Dakota division with headquarters at Aberdeen, S. D., succeeding Mr. Nee; **G. H. Hill,** appointed superintendent of the Trans-Missouri division with headquarters at Miles City, Mont., succeeding Mr. Gillick; **N. P. Thurber,** appointed assistant superintendent of the Milwaukee division with headquarters at Beloit, Wis.; **W. M. Thurber,** appointed assistant superintendent of the Dubuque & Illinois division with headquarters at Davenport, Iowa.

C. W. Galloway, vice president in charge of operation and maintenance of the Baltimore & Ohio, has been appointed by the Austrian government consul for that country in Maryland and Delaware. Mr. Galloway will have the same headquarters in Baltimore and will set aside one hour a day for consulate affairs.

George P. Bagby, vice president and general solicitor of the Western Maryland, has been elected president succeeding **Maxwell C. Byers,** deceased. Mr. Bagby was appointed general counsel also. He was born in King & Queen County, Va., August 19, 1879, and was educated at Richmond College, University of Virginia, and University of Maryland. He entered railway service in January, 1917, as general attorney for the Western Maryland, and in March, 1920, was appointed general solicitor. He was appointed vice president and general solicitor in January 1926.

E. E. Tait, president and general coun-

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Miss Emma A. Kentz

sel of the Pittsburgh & Shawmut, with headquarters at Pittsburgh has retired. **R. M. Shepherd** has been appointed to succeed him as president.

J. P. Cowley, assistant to the general manager of the Gulf, Colorado & Santa Fe, has been appointed superintendent of the Galveston division with headquarters at Galveston, succeeding **A. P. Hall,** retired. Mr. Hall had been in railway service 55 years, 42 of which were with the Santa Fe System.

W. J. Hogan, superintendent of the Pontiac, Mich., terminals of the Grand Trunk Western, has been appointed superintendent of the Chicago division with headquarters at Battle Creek, succeeding **D. T. Crawford,** deceased.

C. A. Johnston, division engineer of the Wabash at Montpelier, Ohio, has been appointed superintendent of the Detroit division with the same headquarters.

M. Ramirez, superintendent of the Torreon division of the National of Mexico with headquarters at Torreon, Coah., has been transferred to the Aguas Calientes division with headquarters at Aguas Calientes, Ags., succeeding **P. M. Hernandez,** transferred to the Torreon division. **Rafael Mora** has been appointed assistant superintendent of the Aguas Calientes division. To serve during the illness of **M. G. Navarro, M. S. Mayagoitia** has been appointed acting superintendent of the Pacifico division with headquarters at Acambaro, Gto.

G. A. Briggs, superintendent of freight claim prevention, Grand Trunk Western, with headquarters at Detroit, has been appointed trainmaster in charge of the Pontiac terminal and Jackson and Cass City subdivisions with headquarters at Pontiac, Mich. **V. C. Palmer** succeeds Mr. Briggs.

The office of the superintendent of freight transportation of the New York Central, Buffalo and east, has been abolished and the duties taken over by **G. Metzman,** manager, freight transportation with headquarters at New York.

Financial & Legal

Elmer J. Halberg, attorney for the Nickel Plate at Cleveland, has resigned to become general counsel for the Pittsburgh & Shawmutt with headquarters at Kittanning, Pa.

William N. Cott, assistant treasurer of the Chesapeake & Ohio with headquarters at Columbus, has retired after 55 years in the service of that road and the Hocking Valley.

Charles Franklin, general attorney for the Southern Pacific with headquarters at New York, is planning to return to private practice in that city January 1931.

Purchases & Stores

R. F. Miller, general storekeeper of the Oregon Short Line with headquarters at Pocatello, has been appointed district storekeeper of the O.R.&N. with headquarters at Portland. **F. E. Cragin,** general storekeeper of the Los Angeles & Salt Lake, has been appointed district storekeeper with headquarters as before at Los Angeles. The positions of general storekeeper at Portland and Los Angeles have been abolished.

J. L. Irish, general storekeeper on the Union Pacific System at Portland, has been transferred to Pocatello with jurisdiction extended to include the Oregon Short Line, the Los Angeles & Salt Lake, and the Oregon-Washington Railroad & Navigation Co.

Traffic

In recognition of the important part women are now taking in traffic and particularly women's activities in furthering shipper and carrier cooperation, the membership of the Associated Traffic Clubs of America has selected a Union Pacific woman as a director. The woman so honored is **Miss Emma A. Kentz,** secretary to W. F. Lincoln, general freight agent at Los Angeles. The election of Miss Kentz at the ninth yearly convention in Atlanta, October 8 and 9, was the first time a woman has been elected to the directorate of the Associated Traffic Clubs of America. She was also the only woman elected. Miss Kentz has been a Union Pacific worker for 15 years.

J. M. Skaehill, division freight industrial agent of the Erie with headquarters at Meadville, Pa., has been appointed industrial agent with headquarters at Cleveland, succeeding **L. C. Kerner,** resigned to become vice president of the Standard Car Loading Co.

George A. Upton, northwestern freight agent of the Baltimore & Ohio with headquarters at Minneapolis, has been appointed division freight agent with headquarters at Garrett, Ind. **G. N. Campbell,** district freight agent at Toledo, succeeds Mr. Upton.

F. B. Griffin, division passenger agent of the M-K-T Lines at San Antonio, has been appointed assistant general passenger agent, solicitation, at Dallas.

Frank J. Wall, has been appointed general traffic manager for the New Haven, the New England Steamship Co., the Hartford & New York Transportation Co., and the New York, Westchester & Boston Railway, effective December 1.

Mechanical

The jurisdiction of **C. E. Peck,** superintendent of motive power and machinery of the O.R.&N. at Portland, has been extended to include the Oregon Short Line between Huntington, Ore., and Green River, Wyo. The jurisdiction of **J. F. Long,** superintendent of motive power and machinery of the Los Angeles & Salt Lake at Los Angeles, has been extended over the Oregon Short Line to Butte. The duties of **H. Crane,** master mechanic on the Oregon Short Line at Pocatello, Idaho, have been extended to include the jurisdiction exercised by **W. H. Bressel** and **W. J. Ingling,** master mechanics at Pocatello. These two positions have been abolished. A leave of absence because of illness has been granted **T. M. Ramsdell,** master car builder of the Oregon-Washington at Portland, and the position has been abolished.

J. Shelaberger, master mechanic of the San Joaquin division of the Southern Pacific with headquarters at Bakersfield, Cal., has been transferred to the western division with headquarters at West Oakland, succeeding **F. C. Keim,** deceased. **J. J. Keller,** assistant master mechanic on the Salt Lake division with headquarters at Sparks, Nev., succeeds Mr. Shelaberger. **A. B. Wilson,** assistant master mechanic at West Oakland, succeeds Mr. Keller.

Civil

The Baltimore & Ohio has abolished the three positions of district engineer. **A. C. Clarke,** district engineer at Pittsburgh has been appointed assistant chief engineer with the same headquarters; **A. H. Griffith** at Cincinnati has been appointed assistant to the chief engineer at that point; **R. Mather** at Baltimore

has been appointed assistant to the chief engineer at Baltimore succeeding **E. L. Gosnell,** appointed principal assistant engineer with the same headquarters.

C. F. Hinchman, division engineer of the Cairo division of the Big Four at Mount Carmel, Ill., has been appointed special engineer on the staff of the chief engineer at Cincinnati.

E. H. Roth, assistant engineer of the Norfolk & Western at Norfolk, has been transferred to Bluefield, W. Va., with jurisdiction over engineering and construction on the Pocahontas division, succeeding **J. W. Raitt,** deceased. **H. N. White,** crossing engineer, has been appointed assistant engineer at Norfolk with jurisdiction over engineering and construction on the Norfolk terminals and Norfolk division.

S. F. Ryan, maintenance inspector of the Wabash with headquarters at St. Louis, has been appointed division engineer of the Springfield division with headquarters at Springfield, Ill. **A. P. Gardner** succeeds Mr. Ryan.

M. B. Kent, division engineer of the Houston division of the Missouri Pacific Lines at Houston, has been transferred to the Houston Terminal division with the same headquarters. The position of division engineer of the Houston division has been abolished and the lines under that jurisdiction added to the Palestine division of which **S. Beacon** is division engineer with headquarters at Palestine.

The headquarters of **C. H. Brodbeck,** division engineer of the Paducah & Memphis division of the Nashville, Chattanooga & St. Louis, has been moved from Paducah to Nashville. The jurisdiction of **E. G. Talley,** assistant division engineer of the Nashville division has been extended to include the Paducah & Memphis division.

J. B. Raymond, division engineer on the Santa Fe at Clovis, N.M., has been appointed roadmaster on the Panhandle & Santa Fe at Amarillo.

R. A. Brown, division engineer of the Rock Island Lines at Cedar Rapids has been appointed roadmaster at Goodland, Kansas.

Obituary

James T. Wallis, assistant vice-president in charge of operation of the Pennsylvania Railroad, died unexpectedly, November 7, at his home in St. Davids, Pa. Mr. Wallis was born in New Orleans, June 1868. He attended the University of Louisiana, Georgetown College and Stevens Institute, graduating from the latter in 1891 as mechanical engineer. He began his service with the Pennsylvania as an apprentice in the West Philadelphia shops in 1891 and was promoted through the successive grades of assistant road foreman of engines, assistant master mechanic, assistant engineer of motive power, master mechanic and superintendent of motive power. In January, 1912, Mr. Wallis was made general superintendent of motive power with headquarters at Altoona, and in March, 1920, he was appointed chief of motive power with supervision over the entire system. In this capacity he was also placed in direct charge of the Pennsylvania's locomotive and car shops at Altoona. He was appointed assistant vice president in charge of operation in February, 1927. Mr. Wallis had come to be recognized as one of the leaders in the design and construction of railway locomotives and cars.

William Piez, European correspondent of the Link-Belt Company, Chicago, with headquarters in Paris, died unexpectedly at Brussels, November 2, aged 52.

S. S. Huffman, assistant superintendent of the Chicago & Eastern Illinois at St. Louis, died in that city October 8, aged 68. Mr. Huffman had been with the C. & E. I. for 38 years.

J. D. White, superintendent of safety of the Illinois Central with headquarters at Chicago, died at the Illinois Central Hospital in Chicago, October 24.

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—Theodore Roosevelt

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Louis D. Blauvelt, former chief engineer of the Denver & Salt Lake, and since 1921 chief engineer of the Colorado highway department, died at Denver, October 26, aged 63.

S. L. Racey, superintendent of the Denver & Rio Grande Western with headquarters at Salt Lake City died October 3.

Abel I. Culver, former vice president and general manager of the Delaware & Hudson, died at his home in Montclair, N. J., October 24.

A. W. Foster died at San Rafael, Cal., October 14, aged 80. Mr. Foster was formerly president of the San Francisco & North Pacific, the California Northwestern and the North Shore. All of these roads are now part of the Northwestern Pacific.

Walter L. Webb, former engineer of track elevation and district engineer of the Milwaukee at Chicago, died at his home in Elgin, October 13, aged 76.

David T. Crawford, superintendent of the Chicago division of the Grand Trunk Western with headquarters at Battle Creek, died at his home in that city, October 1.

Frank J. Easley, former general manager of the Denver & Rio Grande Western and general superintendent of transportation of the Cuba Railroad, died October 12, aged 70. At the time of his retirement in 1925, Mr. Easley had been in railroad service for 46 years.

J. T. Reid, treasurer of the Atlantic Coast Line with headquarters at Wilmington, N. C., died unexpectedly at a hospital in Rocky Mount, N. C., October 11, aged 60.

James T. Wallis

Frank Baackes, vice president of the American Steel & Wire Co., Chicago, died October 18, aged 67.

A. F. Gartz, who retired as treasurer of the Crane Company in 1905, died at Altadena, Cal., October 29.

C. A. Irwin, vice president of the Alpha Portland Cement Co., Chicago, died unexpectedly, October 29.

James B. Finley, retired vice president and general manager of the Southern Pacific of Mexico, died at his home in Los Angeles October 25.

Arthur W. Thompson, former vice president of the Philadelphia Company, Pittsburgh, and former president of the United Gas Improvement Co., Philadelphia, died at Pittsburgh, November 9.

Andrew K. Van Deventer, retired treasurer of the Southern Pacific, died unexpectedly at his home in Haverford, Pa., October 22.

Edson Rich, who retired as assistant general solicitor of the Union Pacific System in 1929, died at his home in Omaha, October 25.

H. C. Conley, retired assistant general freight agent of the Frisco Lines at Oklahoma City, died at Joplin, Mo., October 9, aged 72.

Frank M. Hicks, former president of the Hicks Locomotive & Car Works, died at Cedarville, Ill., October 12, aged 70.

E. H. Flint, assistant auditor of passenger accounts of the Big Four with headquarters at Cincinnati, died in that city, October 19, aged 68.

Supply Trade Notes

The American Rolling Mill Co. has organized a new division of its sales force to be called the railroad division with headquarters at the general offices at Middletown, Ohio. This division will combine the handling of wrought steel wheels, iron and steel sheets and other products. **Logan T. Johnson,** formerly with the **Standard Steel Car Co.** of Pittsburgh, and more recently assistant to the vice president in charge of commercial activities of Armco's forged steel wheel division, has been appointed manager. **H. M. Arrick,** who has been in the sales department for the past three

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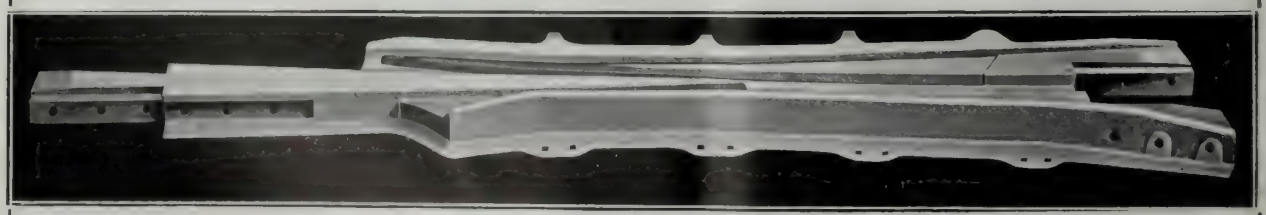

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MEMPHIS, TENN.

years, has been appointed assistant manager, and **C. G. Bacon,** director of wheel research. Three district offices of the railroad division have been established. **W. B. Quail** will manage the New York office, **Ernest Baxter** will be in charge at Chicago, and **F. E. Finley** at St. Louis.

A. H. Armstrong, for many years assistant engineer of the railway department of the **General Electric Co.,** recently appointed chairman of the railroad electrification committee, and consulting engineer transportation department, has established a private consulting engineering office at 16 Troy Road, Schenectady. Mr. Armstrong was graduated from Worcester Polytechnic Institute in 1891. He joined the railway engineering department of the General Electric Co. in 1897, and retired November 1 to enter business for himself.

The J. S. Coffin, Jr., Co. moved recently into its new plant in Englewood, N. J. The facilities of the building will be used to improve service by concentrating the manufacturing, assembling, testing, stores, and shipping departments of the company. The building is of steel and brick and modern in every detail.

Leon F. Hoffman, chief engineer of the **Chicago Pneumatic Tool Co.** at Franklin, Pa., has been appointed general manager, succeeding **O. C. Estergreen, resigned.** Mr. Hoffman has been with the company 20 years.

J. T. Conners, district manager of the **Thew Shovel Co.,** Detroit, has resigned to become a representative of the **American Hoist & Derrick Co.** and will have charge of "American Gopher" sales. The American Hoist & Derrick Co. has moved its Dayton office to Indianapolis.

The General Water Treatment Corpn. has been organized under Delaware laws as a holding company to merge the interests of the **Permutit Company,** New York, and the **Ward-Love Pump Corpn.,** Chicago. **W. Spencer Robertson,** president of the Permutit Co., will be president of the corporation and **Francis N. Bard,** president of the Ward-Love Pump Corpn., will be chairman of the board. Other directors will be: **Harry M. Durning, Vincent Bendix, William M. Flook** and **Kenneth B. Schley.**

B. L. Donahue, representative of **Cutler-Hammer, Inc.,** at Pittsburgh, has been appointed manager of the Buffalo district office succeeding **B. A. Hansen,** resigned.

L. B. Mead, manager of the Indianapolis office of the **Westinghouse Electric & Mfg. Co.** has been appointed industrial manager in the northwest district with headquarters at Chicago. **William J. Morgan,** representative at Indianapolis, succeeds Mr. Mead.

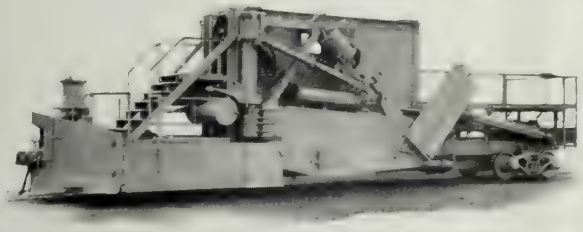
C. S. Powers has been appointed district manager of the **Republic Steel Corpn.,** with headquarters at Tulsa, Okla. The western and Chicago district sales offices have been consolidated and placed in charge of **H. S. Schoeder,** western manager of sales. **L. L. Caskey,** assistant manager of the strip steel division, has been appointed assistant manager of sales for the Philadelphia district.

Stanley Bracken, assistant engineer, manufacturing, of the **Western Electric Co.,** at Hawthorne, Chicago, has been appointed executive vice president of the **Teletype Corpn.,** Chicago, recently acquired by the Bell System.

A. H. Purdom, formerly sales engineer of the **Wood Conversion Co.,** has organized the **Purdom Railway Supplies,** 1136 Straus Bldg., Chicago.

Owen H. Persons, assistant manager of sales of the **American Steel & Wire Co.,** with headquarters at Philadelphia, has resigned to become general manager of sales of the **Edgecomb Steel Co.** with headquarters as before in Philadelphia.

The American Manganese Steel Co., Chicago Heights, has appointed the **Southern Tractor Supply Co.,** 406 Geer Bldg., Durham, N. C., its representative for the District of Columbia, North Carolina, South Carolina, Eastern Tennessee, Virginia and West Virginia.



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W. J. BLACK
Passenger Traffic Manager
CHICAGO

JAS. B. DUFFY
Ass't Passenger Traffic Manager
LOS ANGELES

H. B. Nelson, formerly shop superintendent of the **Chicago & Alton** and before that general boiler foreman of the **Missouri Pacific,** has associated himself with the **Prime Manufacturing Co.,** Milwaukee, in a sales and service capacity.

C. R. Richardson, vice president of the **Inland Steel Co.,** Chicago, has been appointed an executive member of the **Railway Business Association.**

H. Glen Hardy, assistant to the vice president of the **Youngstown Sheet & Tube Co.,** has resigned to become a representative of **Pickands Mather & Co.,** Cleveland.

Frederick M. Kreiner, secretary and treasurer of **Manning, Maxwell & Moore, Inc.,** has been elected a vice president also.

W. S. Stewart has been appointed district manager in charge of the Cleveland territory of the **Lincoln Electric Co.,** Cleveland. Mr. Stewart formerly was in charge of the Pacific Coast offices.

F. H. Maloney, manager of the St. Louis office of the **Truscon Steel Co.,** Youngstown, has resigned to become representative of the **Campbell Industrial Window Co.,** New York.

The Acheson Graphite Corpn., a unit of the **Union Carbide & Carbon Corpn.,** will now have its entire line of Gredag lubricants distributed and sold by the carbon sales division of the **National Carbon Co., Inc.,** Cleveland.

Lester N. Selig, assistant to the president of the **General American Tank Car Corpn.** and the **General American Car Co.,** has been elected president of both companies, succeeding **Elias Mayer,** resigned.

The Babcock & Wilcox Tube Co., Beaver Falls, Pa., has appointed **Lloyd R. Wells,** special railroad representative. Mr. Wells formerly was district manager of the **Carbon Steel Co.,** New York, and prior to that Chicago representative of the Midvale Steel Co.

George S. Chiles, chief mechanical engineer of the **Scullin Steel Co.,** St. Louis, has resigned.

New Rules for Air Transport

Strict government regulations for scheduled air passenger transport services, giving them uniformity of operation similar to that of railway and steamship lines have been promulgated by the department of commerce. The new rules became effective May 15.

The most important of the new rules, which will form a supplement to the basic air commerce regulations, provides that every person or firm operating an air transport service must obtain a certificate of authority from the secretary of commerce. This certificate may be suspended or revoked at any time for violation of the air commerce laws or rules, failure to make reports for falsification of reports, or for "conducting operations contrary to public safety and interest."

In order to obtain and retain a certificate the operator must submit to periodic inspections of his equipment and organization, satisfying the government inspectors that his aircraft are provided with suitable instruments and maintained to "the highest degree of operating efficiency," and that both pilots and ground organization are competent.

The rules further provide that airways over which passenger operations are conducted shall be provided with specified navigation facilities and that the secretary of commerce may delay, suspend, or cancel flights at his discretion.

The opinion that 95 per cent of business men fail at some time, now is paralleled by statistics showing that 95 per cent of all persons die without leaving an estate. And this country carries 100 billions of life insurance!

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of the Transportation Industry

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No. 6

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So Ends the Year

DECEMBER always is the most welcome month of the entire year for many of us because it brings us Christmas, and all the cheerfulness and good-fellowship traditionally a part of the season. Most of us put aside, or at least make believe we put aside, all the fuss and worry of the office or shop, and try for a few weeks to be human beings.

But Decembers, like men and women, do change. Occasionally things are not just as bright and lively as we might like to have them, and some of us are inclined to a bit of grouchiness. The queer thing about this is that you can't be mean or have cantankerous thoughts in your mind for long until your face betrays you, being, as it is, the outward manifestation of the inward spirit.

December isn't the right time to be grumpy with anyone. It is the season for contemplation; the time to remember the little kindnesses and courtesies others have shown you during the year; the month for summing up, getting ready to start all over again, with a new set of resolutions on New Year's Day. It is the time for adding up your successes and blessings, and if you chance to find a little more red ink than you like to see lying around pitch it out the window. Avoid the auditor and the banker. Such persons are constitutionally unpleasant just when you are about to tell the world how grateful you are. Auditors and bankers and controllers ought to be kept by themselves until men and women, tired and maybe a trifle blue, can trim the tree with whatever they have, and be decent at home. The next year, you know, is going to be the best we've had.

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Typical Fleet on the Lower Mississippi at Memphis. The Tow-Boat is Hauling Nine Barges, One of 500 Tons and Eight of 2,000 Tons Capacity.

Railways and Waterways

Beginning a Debate the End of Which Will be Heard in Congress

By Walter Raleigh

MAN'S chattels, his goods, merchandise, freight, or whatever you call it, must be moved from one place to another in this country by any or all of four methods, as most of us know:

By railroad, over privately-owned ways, which has been the standard and established method during the past century. By motor trucks, over publicly-owned highways, which is the newest form of freight transportation in volume. By airplane, which form is still in its infancy. By boats and barges, over rivers, canals, lakes and other inland waterways, developed and maintained at public expense.

At this time public attention has been focused upon the inland waterway method. There are those who are interested in this method for political reasons; others are interested for personal reasons, and still others willing to experiment, although much of the experimentation must be done out of public funds.

True, the inland waterway method is both the oldest and the newest form of transportation. It is now in its renaissance. The romance of Mark Twain days on the Mississippi has been replaced by a modern romance of traffic tonnage, bulk freights, engineering schemes, and large figures of government expenditures. Rem-

niscences of the past have been transformed into elaborate dreams of the future when natural water routes will supplement the artificial rail routes. Songs of steamboating days are now drowned out by songs of docks and locks and discussions of channel depths.

There is much confusion in the minds of the public, and not always a clear understanding in the minds of the advocates of the use of rivers, lakes and canals for freight movement. The views of men advocating one waterway often are at variance with those of men insisting on some other development. Whole sections of the country are at bloodless war with one another over economic expenditures, and the ramifications of the controversy extend into many lines of business.

No doubt the advocates of the development of waterways have stimulated public interest during the last few years. The war emergency brought this about at first, and more recent political discussions and moves have kept the idea before the country in sections where men believe in the great value of such transportation.

Within recent months flood control on the Mississippi has been utilized by the advocates of the use of inland waterway traffic. Channel improvements on the Ohio have focused attention to a wide region in that part of the nation. The formal opening of the Welland ship canal connecting Lake Erie and Lake Ontario through Canadian soil has been used to paint golden visions and pictures of wealth. The prospect of an early move by the Canadian government looking to further progress on the St. Lawrence route, which would let ocean vessels penetrate to the Great Lakes is another example.

Waterway proposals of one kind or another are numerous because, in the opinion of some persons the present administration, led by the President, has encouraged such activities. Also, because of a new Rivers and Harbors bill, with the prospects for much discussion of the subject in the 72nd congress, and the proposed study of all waterway policies by the Chamber of Commerce of the United States.

Politically speaking, the nation apparently has committed itself to a program of extensive construction of river and canal waterways through this decade and beyond. The cost of such efforts means the spending of

Mississippi River Government Barges at New Orleans, Showing Temporary Covering for Grain Loading As Used by the Inland Waterways Corpn.

$65,000,000 or more every year. This is a sum that challenges attention. To the already established system of privately owned railroads the whole of their future is involved as it relates to freight traffic increases, terminal systems, and policy.

In the public mind and in legislative circles the waterways system includes almost the whole of continental United States. First in point of actual, practical current use are the Great Lakes, the much traveled inland seas. The St. Lawrence outlet is a corollary, and in a broad sense so is the New York Barge Canal and the Hudson River. The advocates of the Great Lakes-to-the-Sea movement, however, prefer not to be classed with the general inland waterways discussions, insisting these large bodies of water are merely arms of the ocean unfortunately landlocked.

In point of territory served, political power exerted and public expenditures, the Mississippi, with its tributaries seems to lead. The main trunk is from New Orleans to Cairo, the junction with the Ohio. Other trunks are the Ohio River, which runs to the Pittsburgh industrial region, the route via the Illinois River, and canals to Chicago and the lakes; the further extension to St. Paul and Minneapolis; the Missouri River to Kansas City, and later to Sioux City, and perhaps beyond. Other feeders to the Mississippi system are the Tennessee River, affording industrial drainage from both western and eastern Tennessee and northern Alabama; the Cumberland River through northern Tennessee, the Arkansas and the Red Rivers.

In addition there is the active discussion by proponents of the route known as the Intracoastal waterway. This skirts the Atlantic Coast inland from Boston to New York, Philadelphia, Norfolk, to Beaufort, North Carolina; thence to Florida, and eventually around the gulf to Mobile, New Orleans and on to Corpus Christi, Texas. This waterway is incomplete but that part between Boston and Beaufort is being used for certain minimum traffic. The canal from New Orleans to Corpus Christi is being completed.

The national waterway system thus has three major units, the Great Lakes, the Mississippi, and the intracoastal. By linking these three together the advocates of the extensive use of such transportation methods for freight carriage declare there will come about a waterway belt line around the whole eastern half of the United States. This would mean from the Great Lakes via Chicago to New Orleans, by the coast around to New York, by the Hudson River and New York canals to the Great Lakes again, or up the St. Lawrence.

Because of the topography of the United States the chief interest, discussion and political pressure, and also it must be added, the gravest concern of the railroads, lies in this region just outlined. The western half of the United States has but two projects that have been mentioned. One is the development of the Sacramento and San Joaquin Rivers in California with an outlet at San Francisco. The other concerns the future development of the Columbia

and Snake Rivers in Washington and Oregon, and entering Idaho. This latter is considered for transportation and power.

As for depths, the main Mississippi trunk and the Ohio are now nine feet. The waterway from Chicago to New Orleans is to be nine feet. The principal other Mississippi tributaries are to be six feet deep at first, and deeper when more money is available. The New York Barge Canal is 12 feet deep. The intracoastal waterway is intended to be 12 feet. The St. Lawrence is to be 27 feet; the Welland Canal 30 feet. This gives a slight conception of the plans contemplated, proposed or in actual operation.

One of the New Self-Propelled Barges Recently Put Into Service by the Inland Waterways Corpn. Operated by the Mississippi-Warrior River Service. This Barge Can Carry Enormous Loads.

For the proponents of the waterway systems inland the biggest event of the past year was the opening of the Ohio to nine-foot navigation from Pittsburgh to Cairo on the Mississippi. Work is now in progress to maintain a six-foot channel in the upper section of the Mississippi from St. Louis to the Twin Cities, and a survey is underway to determine the possibility of having a nine-foot channel in the Missouri River as far as Kansas City.

The total mileage of rivers classed as theoretically navigable is 25,000 miles, but only about 4,000 miles of rivers and canals are now in any condition for even a minimum use. Conservative authorities reduce the figure still further to 2,500 miles of rivers having a dependable channel. Railroad trackage in the United States is 250,000 miles, or 100 times as great.

These are arithmetical facts that give general perspective, but they should not be used too casually in measuring the impetus of the movement or the vocal powers of the proponents of this method of transportation of freight.

As every railroad man knows, a traffic picture must be had to judge accurately the place in the national scheme of things of a growing competitor. Geographically speaking, such traffic is confined largely to one area when the Great Lakes are eliminated, for in the latter case its problems are economically unrelated to others. The Monongehela into Pittsburgh is the biggest river in the United States, having carried about 27,500,000 tons in 1928. The Ohio, next in rank, carried a little less than 21,000,000 tons. No other systems can be compared. The lower Mississippi carried only 4,448,000 tons of purely inland traffic. The Erie Canal carried about 3,000,000 tons. The Hudson River carried perhaps 10,000,000 tons. These figures are given without explanation of allowances for local traffic, duplication, or foreign traffic, and must not be considered as technically accurate except in giving a general comparison.

In 1928 the tonnage carried on river, canals, and connecting channels was 227,000,000 tons (or around 140,000,000, excluding the traffic of the Great Lakes). The figures for 1929 when released will show some gain. In 1905 this tonnage was 204,000,000. In 1922 it was 111,000,000. A comparable figure of freight carried by railroads in 1928 is 1,285,000,000 tons, or more than five times the total waterway tonnage, including the Great Lakes.

Railroads are challenging both the fairness and the economic wisdom of public development of waterways to compete with privately owned and demonstrably efficient rail carriers. The argument between the proponents of the waterways and the railroads would be something like this:

Waterway: Bulk commodities can be hauled now cheaply by water. Less power and fewer men are required. The courses are given by nature. It is economically wasteful to haul heavy stuff in cars, on wheels over rails, by routes which are expensive to maintain.

Railroads: It has not been demonstrated that water transportation is economically cheaper than rail, except on the Great Lakes and the ocean where there can be no comparison with railroads. You assume channels and terminals free to the users of waterways, yet if the public expense of development and maintenance of both waterways and the terminals were taken into proper accounting, water might easily cost more than rail. The Inland Waterways Corporation has never given a fair picture because it has never been free from the domination of political pressure, and no system of accounting of overhead, costs, and essential charges has been included.

Waterway: The railroads killed the waterways in the '80s with low rates which were raised at a later time.

Railroads: Rail rates are now regulated more closely by government authority, and this question can not properly be brought in, because real competition between the two methods is not reflected under present regulations.

Waterway: Traffic is increasing more rapidly than the railroads can handle it, without making tremendously expensive additions. Bulk freight should be drained off the railroads to the waterways; it will cost less to improve the waterways than to add to the rail facilities.

Railroads: This, again, is not demonstrated and is very doubtful. It is a fact that railroad revenues are being drained by motor truck transport; and if waterways take away additional business, railroads must raise rates on their remaining business to survive.

Waterway: Traffic has a way of increasing traffic by creating new business regions. The railroads will not be hurt in the last analysis.

Railroads: The fact is that rail traffic is expanding very slowly already. It is unfair competition for the government to subsidize waterway transportation at the expense of railroads, while railroads, through their taxes, must help to pay the bills.

Waterway: But waterway improvement means more than merely transportation, it means flood control, sometimes power. If farmers save a few cents on transportation of grain for export they will get those few cents extra. Agriculture will be benefited.

Railroads: Flood control is granted, but flood control works are far cheaper than navigation works. The expectation of new business as a result of water transportation is largely

sentimental. If grain can be hauled to seaboard more cheaply by water, there is no proof that American farmers will get the difference. Foreign purchasers may get the benefit at the expense of American taxpayers.

The debate goes on at length, and not all the questions have been touched upon in the foregoing. Railroad men have not often been heard in a public way during the last few years, even if their interests have been directly involved, for most railroad executives have become fatalists under government regulations, and are not disposed to enter the lists against the waterways. They are, however, supported in their arguments by some dispassionate economists.

Government authorities, some of whom have favored some development of inland waterways, have gone on record in support of the argument of the efficiency of the present carriers. A. Lane Cricher, assistant chief of the transportation division of the United States department of commerce, said that "Since 1920, our railroads have increased their adequacy and rapidity of service 47½ per cent, measured by ton miles per train-hour. The hourly speed of freight trains has increased by one-fifth; the amount of traffic handled per employe has risen one-eighth. This increased rail efficiency, which has been brought about by the leaders of the railroads of the country, assisted by the buyers of transportation, is simply a corollary of the efficiency that has been witnessed in production enterprises, both agricultural and industrial * * *

"It is highly desirable that further efficiency, wherever possible, be attained in our transport of commerce. It is true the railroads probably will continue as our most important agency of transportation. Even the enormous tonnage, the total combined tonnage carried via the Great Lakes and our rivers and over the ocean to and from our shores, excluding all known duplication, amounted to less than three-tenths of the traffic which originated on our railroads during the same period."

In the discussion as to the relative place of waterways and railroads as to traffic needs, it is pointed out frequently that the European nations have been greatly benefited by the utilization of their rivers and the digging of extensive canals. On the other hand government authorities have asserted frequently that conditions in the United States and Europe differ fundamentally, and, too, that conditions that may make use of water proper and profitable in one locality does not prove that the extensive and expensive development of a waterway or canal in another section would produce the same results. The cleavage between the Great Lakes-to-the-Sea movement and the inland waterway advocates in general is evidence of this fact and its soundness.

Before the waterway systems of the country can be made economically profitable, even granting their development, it will be necessary to provide for adequate river-rail terminals. This need even now is felt in the Ohio region where the latest and largest development of this method is found. As shown by recent research conducted by the transportation division of the department of commerce, the principal modern terminals on the Ohio River, between Pittsburgh and Cairo, are owned by private companies, and are not available for the general public.

Dr. L. P. Nickell, chief of the inland waterways section of the transportation division of the department of commerce says, "Of great importance is the question of joint rates between rail and water carriers. If our waterways and railroads are to be coordinated media of transportation rather than competitive media, free interchange of traffic between them and suitable physical connections are necessary. Traffic originating on any railroad can be delivered to a consignee on any other road of standard gauge in the United States, and traffic is freely exchanged between the various lines. In fact, the prosperity of the railroads has been to a large extent dependent upon a free interchange of traffic. The same economic principles apply to carriers via inland waterways, especially to rail and water interchange.

"In the past, with few exceptions, litigation has been necessary in effecting joint rail and water routes and rates. The expense of such litigation, it is said has been an obstacle in the path of private enterprise in the operation of common carrier services on the waterways. Few joint rail and water agreements between water and rail carriers have been effected."

It is said by the advocates of waterways that the Denison Act should be employed for this purpose. This act deals specifically with the Inland Waterways Corporation, and provides that a water line may apply to the Interstate Commerce Commission for a certificate of public convenience and necessity, which, when granted, carries with it a mandate to the commission to fix joint rates and suitable division of revenue between the water line and all rail carriers connected with its terminals.

Dr. Harold G. Moulton, an economist, head of the Institute of Economics and Brookings Institution of Washington has published a survey recently of the results of an economic study. He concludes the cost of the St. Lawrence project would be about one billion dollars, including 614 million for navigation and 385 million for power; that the proper depth should be 34 feet instead of the proposed 27 feet; that ocean shipping of the highest type would not be attracted to the route; that only 10,500,000 tons of traffic might use the waterway (far less than estimates of the advocates); that most of the benefit for grain export would be to Canada, because grain exports from the Great Lakes region of the United States are expected to decline in the near future; that the overhead charges would be 36 million dollars for a year, or more than is justified for navigation purposes; and that the power which could be developed could not be marketed at a sufficient rate to justify its generation and distribution.

These are formidable objections from an authority so prominent as Doctor Moulton; they indicate something of the opinions now vocal in the general discussion of the day. This survey has aroused bitter resentment among those seeking to smooth the legislative route for government expenditures.

There is no doubt of the trend in the nation for a fuller use of streams, rivers, lakes and canals for the movement of bulky freight. It is as definite, although perhaps not so spectacular, as the increase in the use of the motor truck over our highways. The political forces of the nation are represented in this movement in a very definite way. President Hoover has spoken on the subject, but always with caution, and with reservations as to the need of cooperation and adequate planning, and the elimination of direct competition hurtful to the established railroad interests.

So far as the immediate future is concerned the railroad interests should bear in mind the official program of the present administration at Washington as outlined by Norman F. Titus, chief of the transportation division, bureau of foreign and domestic commerce, who said that the absolutely necessary factors for such development on a national scale are:

A suitable navigable waterway.
Suitably designed equipment.
Proper terminals.
A balanced load factor; that is, an

(Continued on Page 46)

The Canadian Pacific Royal York at Toronto

By E. W. Beatty

Chm. & Prest.

The Canadian Pacific Royal York at Toronto.

THE ROYAL YORK at Toronto, about which you have asked me to write, is further demonstration of Canadian Pacific determination to give its patrons adequate hotel facilities. The hotel, containing more than 1000 rooms, was opened in June, 1929, and already we are considering the building of an addition to meet properly the needs of the business it has acquired.

The Royal York occupies a prominent site at the corner of York and Front streets, and is directly opposite the new Union Station, with which it is connected by a spacious subway. The site upon which it is built formerly was occupied by the Queens Hotel, a famous landmark in Toronto, one of Canada's best known hostelries.

The building, which is 340 feet long by 194 feet deep, rises to a height of nearly 380 feet above the level of the sidewalk. The lower stories, rising some 75 feet to the top of the convention room floor, cover the full area of the block. Above these are eleven bedroom floors planned in "H" form, the courts facing north and south. The bedroom floors continue up a further five stories in the central block, above which the block narrows to a central tower which rises four floors to a steeply pitched copper roof.

In general, the architectural treatment of the exterior walls, which are of Indiana limestone, is quite simple, the lower stories being particularly plain. Windows of the concert hall, ballroom and banquet hall are interestingly treated with slender columns supporting semi-circular heads over each half of the window with an outer arch across the full width of the opening. Balconies, simple in form and relieved by carved panels and brackets, give a rather pleasing appearance to the windows. The exterior treatment of the bedroom floors is also very simple, broken here and there with tiers of coupled windows extending through four floors and enclosed with columned jambs, terminating in semi-circular heads. The windows in the roof garden are treated similarly to those on the convention floor, while above the roof garden there is an arcaded parapet, broken at intervals by vertical members, between which runs a cast iron railing. The ribbed copper roof, which crowns the tower, is pierced with slender dormers and finishes with a cresting along the ridge.

One can readily see, upon entering the hotel, that the architects have not been compelled to economize in space. Especially is this noticeable in the public rooms. This, of course, is due to its tremendous size. While ample provision has been made for every possible requirement of the guests, there does not seem to be any wasted space.

In planning the bedroom floors of the hotel, accommodation has been provided for a large number of guests. There are nearly 1,100 bedrooms of varying sizes, each provided with a private bathroom and clothes closet. There are also a number of sample and display rooms for the commercial traveler, with a number of self-contained suites. A vice-

The Dutch Suite in the Royal York.

regal suite has also been provided for distinguished visitors.

One of the features of the hotel is a series of 16 suites, each of which consists of a sitting room, two bedrooms and bathrooms planned around a period or other motif ranging from the middle ages down to art moderne, with furniture and furnishings designed in like manner. They include a Tudor, Jacobean, William and Mary, Queen Anne, Georgian, Colonial, Louis XVI, also a Dutch, Chinese, Russian, Spanish, Venetian, Italian, Flower and an Art Moderne suite.

The basement or lower floor is reached through a main entrance vestibule leading to a central hall and to long arcades, which also have direct access from the York street entrance. This floor also contains a foyer, grill room, coffee shop and barber shop, as well as a number of shops facing on Front street and on the arcade. In the center of this floor there is a large exhibition hall, with space available for individual and mass exhibits. The entrance to the subway, connecting the hotel with the Union Station, is also on this floor.

The main floor is reached through the principal entrance on Front street, which gives access to the spacious and finely decorated lobby in the center of this floor. Here the hotel offices are situated with the main dining room and lounge on the left, and on the right the venetian cafe and a second entrance from a new street, which has been constructed on the east side of the building. The rear or northern portion of this floor is devoted to the kitchens, cafe services, etc., which occupy a large area.

The mezzanine floor, which overlooks the main lobby, contains the main lounge room, writing rooms, foyer library, tea rooms, three large private dining rooms and six smaller dining rooms. There is also a fully equipped hospital on this floor, with offices and a considerable area of service space.

Perhaps the most important floor of the hotel is the convention floor, situated immediately over the main mezzanine. The entire area of this floor is given up to the banquet hall, ballroom, convention or concert hall, and foyer. The convention or concert hall occupies the entire area of the west wing, and has a seating capacity of over 1,900 persons. This room is equipped with a large stage at the north end of the room, suitable for all purposes with an organ chamber behind the stage in which is housed an immense five-manual organ. There is also an orchestra pit, in the left-hand corner of which is the organ console. The concert hall has also been equipped with a screen projection which can be used for lecture purposes.

The banquet hall, which is in the east wing, has seating accommodation for banquets of over 1,250 persons, and a seating accommodation for convention purposes of over 2,250. It is treated in a manner similar to the concert hall except that there is no stage. The concert hall and banquet hall have been provided with a balcony.

The ballroom, at the front of the building, is the most elaborate of the three rooms on the convention floor. It has direct communication with each of the rooms mentioned by means of a small hall, and can be used also for banquet and convention purposes, when required. Amplifiers, in connection with the public-address system, have been installed, so as to enable audiences in all three rooms to listen in on the same program.

There is also a mezzanine floor, in

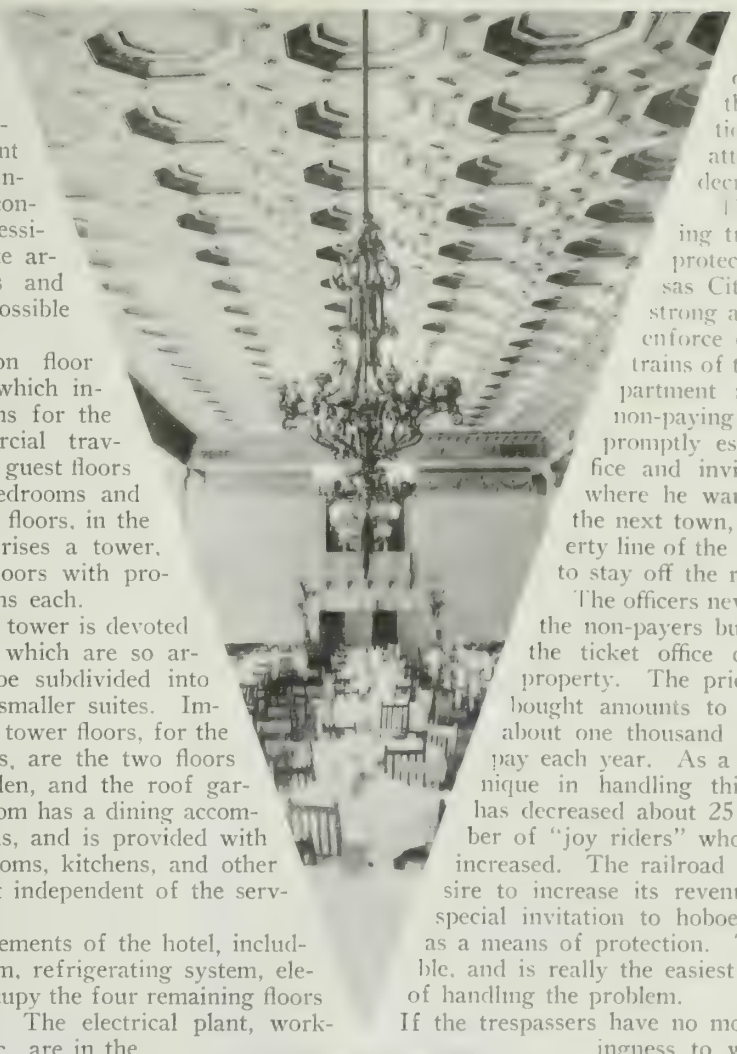
In the Main Lobby of the Royal York.

connection with the convention floor, on which are check rooms, lounge rooms, retiring rooms, and other services. The large amount of accommodation for dining purposes on the convention floor has necessitated an entirely separate arrangement for kitchens and services to meet every possible requirement.

Above the convention floor are two guests' floors, which include large sample rooms for the convenience of commercial travelers. Nine other typical guest floors follow, each with 78 bedrooms and bathrooms. Above these floors, in the center of the building, rises a tower, which embodies three floors with provision for 24 guest rooms each.

One whole floor in the tower is devoted to the vice-regal suites, which are so arranged that they may be subdivided into two or three groups of smaller suites. Immediately above the four tower floors, for the accommodation of guests, are the two floors composing the roof garden, and the roof garden mezzanine. This room has a dining accommodation for 350 persons, and is provided with check rooms, retiring rooms, kitchens, and other services so as to make it independent of the services below.

The mechanical requirements of the hotel, including the ventilating system, refrigerating system, elevator machinery, etc., occupy the four remaining floors above the roof garden. The electrical plant, workshops, storage rooms, etc., are in the sub-basement of the new structure.



A Glimpse of the Main Dining Room.

The vertical transportation necessary for the public facilities, and for the entertainment of the guests, had of necessity to be adequate. To meet these requirements, ten passenger high-speed elevators and seven service elevators have been provided, with the latest safety devices known for the control and operation of both elevator machines and elevator doors. Micro levelling devices have been installed which bring the cars to an exact level with the floors. Steam for the heating of the hotel is supplied from a central heating plant south of the new Union Station.

Most of the public rooms such as the convention hall, banquet hall, ballroom, main dining room, Venetian cafe, roof garden, have been equipped with a public address system operated from the radio control room on the convention mezzanine floor, enabling amplification of public speaking within the individual rooms and local broadcasting from any one room to any other room. In addition the various bedrooms have been provided with radio outlets to which a loud speaker can be plugged in and local programs received. This is also controlled at the hotel radio control room.

Special Agents Save Money

By Deville Thatcher

By the use of a new technique in handling trespassers, the special agents of the Kansas City Southern caused to be collected, last year, more than $2,000 from persons who sought to ride free on freight and passenger trains. Due to the fact that the trains on this road usually are long, made up of as many as 125 cars at times, hoboes in the past felt that the KCS train would be a good one to ride, the chances of being caught being minimized because of the length of the train.

But since the special officers now invite the trespassers to buy tickets instead of merely escorting them or more often chasing them to the property line, collections have increased and attempts to ride free have decreased.

The KCS has 31 men riding trains and policing yards protecting the line from Kansas City to Port Arthur. No strong arm methods are used to enforce collections or to rid the trains of trespassers. Vigilant department men are quick to spot non-paying riders, and each is promptly escorted to the ticket office and invited to buy a ticket to where he wants to go or at least to the next town, or is taken to the property line of the railroad and firmly asked to stay off the right of way.

The officers never take any money from the non-payers but merely escort them to the ticket office or invite them off the property. The price of the average ticket bought amounts to about two dollars, and about one thousand trespassers are made to pay each year. As a result of this new technique in handling this situation, trespassing has decreased about 25 per cent, and the number of "joy riders" who become pay riders has increased. The railroad has not the slightest desire to increase its revenue by selling tickets by special invitation to hoboes but uses this method as a means of protection. The system avoids trouble, and is really the easiest and most effective way of handling the problem.

If the trespassers have no money and signify a willingness to work, the special agents become a labor bureau. They tell the hobo where public work is being done and probably wanted. Especially during the berry season is this true. Farmers often notify the department men just how many workers are wanted and when the non-payers are rounded up at the ticket office, they are told where to find employment. Many of them take advantage of this opportunity to work and in turn patronize the KCS when transportation is desired.

The department consists of one chief special agent, three division special agents and 27 officers. From one to three years' training is given all men in the special department. One man is sent to the New York State School for Police for a full term of six weeks. However, D. M. Lay, head of the KCS special agent department, does not say whether they take a course in collection and accounting or not.

Economy in Treated Ties

"A saving of $145,000 a day accrues to the railroads of the country

through the present practice of using chemically treated timber for cross ties and other purposes," said C. C. Cook, maintenance engineer of the Baltimore & Ohio Railroad, at a conference of the public utility group of the National Association of Purchasing Agents, held in the department of commerce, Washington, recently. Mr. Cook addressed this meeting as a member of the national committee on wood utilization of the department of commerce, which advocates the use of preserved lumber as a part of its program to further the intelligent use of wood.

"Since 1909," Mr. Cook said, "the consumption of treated wood in this country has increased from 75 million to 336 million cubic feet. The railroads consume three-fourths of this quantity at present, largely for cross ties. It has been found that the life of chemically treated ties is frequently treble that of untreated ties."

Mr. Cook predicted that as a result of continued improvement in wood preservation methods, the average life of ties will soon be more than 20 years. When this is true, he said, the railroads will save $287,000 a day by using treated stock, as compared to the present saving of $145,000.

Another important outlet for treated lumber, Mr. Cook said, is for telephone and telegraph and power poles. This field is steadily expanding. Through the efforts of the national committee on wood utilization, the average consumer who uses lumber in small quantity is now able to secure treated stock from retail lumber yards. In cooperation with the American Wood Preservers' Association, the National Lumber Manufacturers' Association, and the Ohio Association of Retail Lumber Dealers, the national committee on wood utilization has arranged for the retail distribution of treated lumber in Ohio. The use of treated lumber, according to Mr. Cook, is economical in two ways; in the first place treating wood extends its life; in the second place its use lowers replacement and upkeep costs materially. The National Association of Purchasing Agents is cooperating with the national committee on wood utilization in its work to further intelligent wood-using practices.

A Pint Pot Holds Only One Pint

If the railroads are to embark upon a large construction program their tax burdens should be lightened and not increased, says the Wall Street Journal. What is the nature of these state public works? Are they not, like federal highways and waterways, designed to compete with the railroads, thereby still further impairing their power as taxpayers? One reason why the building trade has not responded with any great enthusiasm to easier money is that many of the great cities are over-built, and for the most part are assessed at high valuations for taxes while the new business

In the Grand Ballroom of the Royal York at Toronto.

buildings and residential apartments are merely drawing tenants away from the old. There is nothing pessimistic about keeping our feet on the ground.

We are all excited by the love of praise and the modest are most influenced by glory.—*Cicero.*

Safety Record is Set

For three consecutive years the railroads of the United States and Canada have transported approximately 500,000,000 pounds of explosives annually without the loss of a life and with negligible property damage. The figures are from the annual report of Colonel B. W. Dunn, chief inspector of the bureau for the safe transportation of explosives and other dangerous articles, which was organized in 1906 under the auspices of the American Railway Association. One railway employe was slightly injured by an explosion in a box of fireworks, and the property damage in the three-year period totaled $213.

In 1907, the first year of record, explosives were charged with seventy-nine accidents, fifty-two fatalities, eighty personal injuries and property loss of nearly $500,000. Including explosives the bureau safeguards the transportation by railroads of 227 products which might cause fire or explosions.

Have You Any of These Securities?

The government of the United States now has the free use of $37,748,950, because securities for that amount have never been offered for redemption and the interest long since has ceased, according to statistics just made public by the treasury. Treasury records offer no answer or reasons for the failure of investors or holders of the government obligations to turn their securities in for the cash that must be held as a reserve against them; the records show only the total of each type of security unredeemed, but these reveal that more than $151,000 of the old debt matured prior to 1861, and that, including this amount, $1,727,150 of debt which matured prior to April 1, 1917, is bearing no interest to the owners.

The treasury is convinced that there will be very little of the so-called pre-war debt ever submitted for redemption. It was said that, generally speaking, the securities representing that part of the government's debt might be safely catalogued as destroyed. It was explained at the same time that none can know definitely what has happened to the bonds or notes or debentures that were issued so long ago. Some of them may yet be found as has been the case with old types of currency when old homes or other structures are razed, and hiding places of the securities thus disclosed, places of concealment, the department said, that probably the security owners themselves had forgotten.

"Easy money is not good money."—*Thomas W. Lamont.*

Big Increase in Air Traffic in Half Year

By W. J. Kennedy

—P & A Photo.

The Navy Dirigible, Los Angeles, Flying Gaily Over the Empire State, the World's Highest Building, in New York—Up 87 Stories Now! What a Life!

AIR TRAVEL during the first six months of the current calendar year surpassed the amount of travel during the entire year of 1929, the aeronautics branch of the department of commerce announces.

American operated scheduled lines, according to Clarence M. Young, the assistant secretary for aeronautics, carried in domestic and foreign service 208,357 passengers for the half year as compared with 173,405 during the 12 months of 1929. Domestic lines carried nearly nine times as many passengers as did foreign lines during the January-July period. Direct comparisons are made between the first six-months or between the last six-months periods of two calendar years, as flying conditions are more favorable during the last half of the year, and this fact therefore usually is reflected in the totals.

However, the number of passengers carried in the first half of 1930 was greater by 87,425 than the number for the last six months of 1929. The number of passengers flown during the entire year of 1929 was 173,405.

In a study just completed the totals for domestic air lines, and foreign air lines operated by American companies were separated, instead of being combined as in previous studies. The passenger traffic figure for domestic air lines is 185,956 and for foreign air lines 22,401, for the first six months of 1930.

Air mail poundage also increased during the six-months period over the similar period last year, but not in so great a degree as did passenger traffic. The air lines carried 3,761,376 pounds of mail from January to June, 1930, as against 3,468,562 pounds during the first six months of 1929. The mail poundage figure for January-June, 1930, includes 3,571,956 pounds of domestic air mail and 189,420 pounds for foreign air mail.

Air express increased from 976,219 pounds carried in the first half of 1929 to 1,145,477 pounds in the first half of 1930. Most of the express was carried on the domestic lines, which flew with 1,142,458 pounds. The foreign lines contributed 3,019 pounds to the total.

The total miles flown by scheduled air transport planes for the 1930 period was 16,902,728 of which 14,595,915 was on domestic lines and 2,306,813 on foreign lines. In the like period of 1929, the miles flown were 9,201,338.

The figures on scheduled airway operations for January to June, 1930, were based upon reports from 38 operators and 89 domestic air lines, and nine operators flying 27 routes into Canada, Latin-America and in Alaska.

Air Safety Increases

A slight increase in the number of miles flown for each accident in civil aeronautics in the United States for the first six months of 1930 over the same period for the previous year is shown in the half yearly report of aircraft accidents made public November 15 by Clarence M. Young, assistant secretary of commerce for aeronautics.

A total of 68,669,928 miles was flown by civil aircraft in the United States between January and June of

P & A Photo

Trap Door on Ford Plane, Showing How the Mail is Now Stored in the Wings of the Big Ship.

1930 in scheduled air transport and miscellaneous operations, an increase of almost 12,500,000 miles over the same period in 1929.

Scheduled air transport includes those operations in which aircraft carry passengers, mail and express over fixed routes at regular intervals. Miscellaneous operations include experimental, exhibition, industrial, student instruction and pleasure flying.

The report on scheduled air transport operations shows that the number of miles flown per fatal accident in this type of service increased almost three-fold, while the miles flown per accident of any kind in scheduled flying more than doubled.

Direct comparisons have been made.

In scheduled air transport operations for the first half of 1930, the report shows that there were 16,902,728 miles flown, and as there were six fatal accidents, the mileage flown for each fatal accident was therefore 2,817,121. In 1929 for the same period, there were 9,201,338 miles flown and nine fatal accidents, which placed the miles per fatal accident at 1,022,371.

The causes of the accidents are divided into four major classifications —personnel, power plant failures, airplane failures and miscellaneous. In addition, a fifth category is given over to undetermined and doubtful causes.

The largest percentage of accidents was attributed to personnel, the total being 57.14 per cent. The next largest percentage was charged to miscellaneous, which amounted to 17.65 per cent. Power plant failures contributed 15.02 per cent and airplane failures 8.78 per cent. In the miscellaneous class, airport and terrain was charged with 9.71 per cent, weather with 6.52 per cent, darkness, .09 per cent, and causes not falling under the general classifications, 1.33 per cent.

Conference on Aeronautics

Twenty or more states will have delegates in the first conference ever held in this country to meet Dec. 16 at Washington under the auspices of the aeronautics branch of the department of commerce. Five fundamental subjects to be taken up are uniform basic state regulations and laws; adoption of federal air traffic rules by states for local enforcement; methods of local enforcement; state enabling acts for airport acquisition and control; and importance of uniform airport field rules.

Aerial Mail to Europe?

The first proposal for a regular transatlantic air mail service was made by the postoffice department Nov. 27. It sent requests for bids on a weekly service to leading aviation concerns in this country.

The postoffice department specified the Azores route with one terminal at New York and the other in Europe to be selected later.

Service would begin about June 1 of next year or as soon thereafter as possible.

W. Irving Glover, assistant postmaster general, said bids for the service will be opened at noon, December 29.

The contract would run for 10 years, beginning June 1, 1931, or on such earlier or later date during 1931 as may be agreed upon.

Fish By Air From Far North

Airplanes are going to deliver fish —fresh fish—from northern Saskatchewan lakes to American and Canadian markets in less than one day, which, under old conditions, would require from two to three weeks, according to a report from the bureau of fisheries in Washington. One plane already is employed and three more have been ordered. The report says:

Fish caught at Lac la Ronge and Pipestone Lake, approximately 300 miles north of Prince Albert, will be in Winnipeg market in less than 24 hours, according to the present schedule, whereas it takes 22 days with horses and 14 days with tractors to get the product to a railroad. The transportation company which has decided on this use of planes, handles from 500,000 to 1,250,000 pounds of fish every season. It is expected that approximately 200,000 pounds of choice fish will be shipped at the beginning of operations.

Don't Worry When You're in the Air

When flying for pleasure or business think of nothing else, says the American Air Transport Association in a "Don't Worry" circular for passengers. These are the association's suggestions:

The pilot always takes off, and lands into the wind. Be patient while the plane taxies to the corner of the field before taking off. The luxury of flying

doesn't appear until you begin to use the third dimension.

The pilot always banks the plane when turning in the air. Just as a race track is banked at the corners, so an airplane is tilted when making a perfect turn. Take the turns naturally with the plane. Don't try to hold the lower wing up with the muscle of the abdomen—it's unfair to yourself and is an unjust criticism of your pilot.

The atmosphere is like an ocean. It supports the plane just as firmly as the ocean supports a ship. At the speed you are traveling, the air has a density practically equivalent to water; to satisfy yourself, put your hand out of the window and feel the tremendous pressure. That ever-present pressure is your guarantee of absolute safety.

The wind is similar to an ocean current. At flying levels it is usually as regular as a great, smooth-flowing river. You can study its direction by watching the shadows of clouds on the country below, or the smoke from chimneys. Once in a while the wind is gusty and rough, like the gulf stream off the coast of Florida. These gusts used to be called "air pockets," but they are nothing more than billows of warm and cool air and nothing to be alarmed over.

The air pressure changes with altitude. Some people have ears that are sensitive to the slight change in the air-density at different altitudes. If so, swallow once in a while, or breathe a little through the mouth, so that the pressure on both sides of the eardrums will be equalized. If you hold your nose and swallow, you will hear a little crack in your ears, caused by the suction of air on the eardrums. Try it.

Keystone View Co.

Here's the Interior of the Dornier Flying Boat, or, as the Germans Say, Das Eleganteste Flugzeug der Welt, Which is Mild Enough, We Think.

Did You Notice It?

The average retail cost of food was lower on Oct. 15 than on Sept. 15 in 43 of 51 reporting cities, according to the federal department of labor. Prices went up, however, in five cities and were unchanged in three. For the year ended Oct. 15 all 51 cities showed decreases, ranging from 14 per cent in Portland, Ore., and Butte to 7 per cent in Mobile.

While retail food prices were dropping in October, wholesale prices for various commodity groups were likewise decreasing to bring the purchasing power of the 1926 dollar to $1.211.

Safety in Colors

To add to the visibility of the self-propelled cars used on short lines of the Canadian National Railway, railroad officials are having the fronts painted in a bright combination of red and yellow. The move is being made as a further safeguard against railroad crossing accidents.

"There's no expedient to which a man will not go to avoid the labor of thinking."—*Thomas A. Edison.*

—Keystone View Co.

This is the Dornier Flying Boat, Do-X, About Which You Have Heard So Much. The Ship Has Taken 169 Passengers and Crew on Long Test Flights. The Visit to the United States Has Been Postponed.

Take a Look at This If You Tire of Sunshine and Warm Days.

The Romance of the Rails

AGNES LAUT, a Canadian writer long established in the commercial literature of our times, has contributed another to the 700 or more railroad volumes already on the book shelves of this reading nation. And the number does not include the books about the builders and financiers such as Vanderbilt, Hill, Harriman, Van Horne and others. Much might be written about these books but not without loss of friends, perhaps, for an astonishingly large number of them are marvelously confusing and inaccurate. In "The Romance of the Rails," (two volumes, Robert M. McBride & Co., 7 West 16th street, New York, $7.50), Miss Laut has presented what is becoming an old story in a wonderfully interesting way. Beyond a doubt the author went far in her studies before writing her book. Her well known reputation for care and thoroughness suffers somewhat, however, when she writes about the Transportation Act of 1920, in the second volume. If the slip were merely an expression of opinion no attention would be paid it here, but it is far more, and therefore dangerous, so very dangerous, coming from such a popular writer, that it is not proper to overlook the error.

On Page 519, Vol. II, Miss Laut says, "While the Transportation Act of 1920 does not guarantee profits slightly over five per cent, *it does enact that traffic returns above that five per cent shall be appropriated and applied* in certain *ratio to help weaker lines.*

Again, on Page 519, Miss Laut says of consolidations, "We have already seen how in the Roosevelt regime consolidations were dissolved and how, later, in the Transportation Act of 1920 *they were ordered to go ahead.*"

Where Miss Laut gathered her ideas about the Transportation Act it is difficult to say; certainly not from the act itself. The act says—leaving out the circumlocutionary verbiage—that the Interstate Commerce Commission is to say from time to time just what a fair return may be, keeping in mind the transportation needs of the country. This fair return has been fixed tentatively at 5¾ per cent, and it may be increased or cut down at any time by the commission. Further, the act provides that *one-half of all net operating income in excess of six per cent* shall be placed in a reserve fund established and maintained by the carriers, and the remaining one-half must be paid to the Interstate Commerce Commission within four months following the period for which such excess earnings are found to have been realized, for the purpose of establishing and maintaining a general railroad contingent fund. When a difference of one-half or one per cent amounts to millions of dollars it is scarcely fair to be reckless with figures.

The Transportation Act does not order the railroads to do anything whatever about consolidating. It instructs the *commission* to prepare a plan for consolidating the roads into a number of systems. This the commission did a few months ago after ten years' work.

Miss Laut's book is highly entertaining and informative, despite the errors referred to, especially for those given to worth-while reading. The strictures noted with respect to the net return are not intended to convey any unpleasant impression. The author's style is delightful. We wish she would be more careful of our half per cent. However, being a Canadian, living where government ownership makes one less regardful of such things perhaps—the people paying the bill—Miss Laut's little lapse from accuracy may be forgiven. The Romance of the Rails is well worth having in every railroad man's home or office. Indeed, it would be a fine idea to have a law requiring all voting citizens to read such books, for certainly the whole country needs to know more about the railroads.

"It's faith in something and enthusiasm for something that makes a life worth looking at."—*Holmes.*

Eight Men Talk Money at a Table

By Don Charles

Washington

Scenery Along the Canadian National Railways in the Rocky Mountains.

EIGHT MEN gather around a massive table in a boardroom in Washington. They discuss the financial policies of a nation and the relation of the needs of business to the money resources. Their decisions may cause a crash of billions in stock market values. A million men may be made rich or a million men may be made poor. There may be a crisis in London, Paris or Berlin. Their judgment has a direct relation to the business of transportation.

These eight men are the members of the federal reserve board, which in turn rules the greatest banking system in the world. Its power is enormous. The British empire dared not return to the gold standard without assurances of its cooperation and support. Its influence extends over the financial systems of the entire world. If it has not used these powers to the limit it has been because of self-restraint and not from lack of authority.

With the exception of Andrew W. Mellon, secretary of the treasury, the members of the board are little known. They make few speeches and their pictures are seldom in the papers. They never pose for the movies.

It would be difficult to assemble eight men more widely diversified in background, training or experience. They include a big business man, a bank examiner, a banker, an editor, a college professor, a lawyer, a merchant and a farmer.

This is no accident. The law provides for geographical diversity by prescribing that not more than one member of the board shall be appointed from any federal reserve district, and states that the President in making his appointments "shall have due regard to a fair representation of the different commercial, industrial and geographical divisions of the country." Under the law at least two must be "experienced in banking or finance" and one must be a farmer. The purpose plainly is that this diversification of outlook and interest shall insure impartiality in financial matters and safeguard control by any financial clique or by any section of the country.

The board governs the entire federal reserve system. It has a member from each federal reserve district, and two ex-officio members, the secretary of the treasury and the comptroller of the currency. The term of office is ten years and there is an appointment or a reappointment every two years by the President. All the members have offices in the treasury.

The federal reserve board is thus legally defined. The whole federal reserve system is designed for:

1. Mobilizing the country's gold.
2. Administration of a flexible system of currency.
3. Maintenance of a reservoir of credit to be used for the best in-

terests of the basic business of the country. By basic business is meant transportation, agriculture, trade and industry.

Twelve reserve banks, each serving its own region, with the federal reserve board in Washington over all as the high command, constitute the federal reserve system. The twelve reserve banks may be termed the army corps, and the 108 directors of the reserve banks the general staff. In many operating matters the banks are independent of the board, but on the larger phases of credit policy such as affect the transportation business of the nation, the board directs. Sometimes ideas conflict as to what the policy should be, but ordinarily the system proceeds as a unit.

The federal advisory council consists of a body of twelve experienced private bankers, of whom one is selected by the reserve bank of each district. Men like J. P. Morgan and Paul Warburg have served on this council, which meets four times a year and presents its recommendations or criticisms regarding the system's present or prospective policies.

The federal reserve banks are financial reservoirs. The member banks keep their entire legal reserves on deposit in the reserve bank. Nearly all the gold in the United States is in the reserve banks. These reserves are like a central water supply. They flow as business needs, to banks in the district or to another reserve bank.

The principal credit powers of the board lie in the pumping out or the drawing in of the credit of these twelve banks. This credit belongs, it might be said, to the member banks, but its administration is largely in the hands of the reserve banks.

There are three principal pipe lines through which credit is released or withdrawn: (1) rediscounts or commercial paper for member banks; (2) purchase or sale of government securities in the open market, and (3) purchase of bankers' acceptances, or bills as they are offered.

In practical operation the situation is that there must be some general agreement among the 108 bankers and business men in the federal reserve system throughout the country, before the reserve board at Washington adopts a new policy or program or rate. The board guides and acts as a clearing house for expressions of judgement, but essentially it is the 108 who determine the decision, for no decision is taken by the board without consulting these operators of the twelve reserve banks. So close and frequent is communication kept up by telephone that it is as if all the officials of the system were assembled in Washington.

The rediscount rate by specific provision in the law "shall be fixed with a view of accommodating commerce and business." Note the "accommodating commerce and business." Herein lies the authorization which has been construed as meaning that if the demands of the security market pull interest rates to business above a level that is healthy to business, then the federal reserve board is justified in taking steps to protect the business borrower.

Recreation Corner in the Pacific Electric Railway Employes' New Club House at Los Angeles.

It is in this specific clause that the transportation business of the nation is represented. It is one large portion of the nation's financial system that must be accommodated both as to the protection of physical resources and in the supplying of financial means for the steady handling of crops and other items of transportation business.

There remains another power of the federal reserve board. It may be called persuasion or education or moral leadership. Persuasion is a very important factor in the board's influence as everyone knows by this time. Persuasion has accomplished and will accomplish much. It is hard to measure and its influence may easily be the object of skepticism, but those who knows the unused power of the board do not doubt its potency.

The apparent immunity of the federal reserve system from politics is not a matter of luck or accident. It is due in part to the fact that a number of leaders of both parties have from the beginning regarded this system as an institution which should be kept clear of the evils of patronage. Even more, it is the result of the steady resistance by the board itself against all attempts to drag it into politics. There are several notable incidents when first encroachments were promptly spurned.

At the bottom, however, this immunity from political control and its attendant evils lies in the fact that the federal reserve banks are not government banks. They are bankers' banks. The entire financial system of the nation would thus resist any apparent political encroachment.

Roy A. Young, the present governor, is the youngest man on the board. About 30 years ago he was a messenger for the First National Bank of Marquette. Like one of Alger's heroes, he went up the banking ladder rung by rung until in 1919 he was appointed governor of the federal reserve bank of Minneapolis. He reported to Washington in 1927 but in dollars and cents he accepted a financial cut from $25,000 to $12,000 a year.

How Many Citizens Know This?

Competing transportation agencies, subsidized by taxation, are constantly cutting into railroad traffic, both passenger and freight, while wages and taxes continue to increase from year to year. This is the concern of the farmer, the merchant, the manufacturer, the hotel keeper, quite as much as it is of the railroad man, since it cannot be denied that responsibility for governmental policies rests with the people themselves and not with public officials alone. In the main, public officials do what they conceive to be the will of the people. If they did not, they could not continue in office. Obviously, therefore, the people are responsible for present governmental policies with respect to the railroads.—*C. D. Morris, Western Railways Committee, Chicago.*

"A liberal education is not to be confused with mere attendance at school or college with a certificate to that effect."—*Nicholas Murray Butler.*

Forty Millions in Motor Vehicles

Class 1 Roads Reply to Questionnaire of I. C. C.

By R. P. Harper

The Mt. Royal Station, Baltimore & Ohio, a Photograph by G. H. Coster, Winning Honorable Mention in the Photographic Exhibit at Baltimore a Year Ago.

CLASS I steam railways had a property investment in motor vehicles of $40,048,607 on June 30 of the current year, according to answers made by the carriers to questionnaires sent them by the Interstate Commerce Commission in connection with its investigation into the coordination of common carriers subject to the Interstate Commerce Act with common carriers by motor vehicle, it was announced Nov. 19.

The figures made public by the commission deal only with motor vehicles actually owned or indirectly controlled by the railroads through subsidiary companies, and do not cover the bus and truck operations of companies independent of the railroads, or with which the carriers have contractual agreements.

During the six months ending June 30, 1930, the railroads operated 2,887 buses, and maintained 33,187 miles of intrastate bus routes and 23,040 miles of interstate routes.

Buses operated by the carriers traveled 58,707,886 miles during the six-month period, both interstate and intrastate, the interstate mileage alone being 15,372,434.

The total number of passengers carried on these buses during the period was 34,113,361 and the revenues received from the traffic was $14,614,011. In interstate travel alone 5,090,561 passengers were carried and the revenue was $3,371,391.

The railroads, either directly or through subsidiary companies, operated 551 trucks and 115 trailers during the six-month period, and maintained 8,863 miles of intrastate and 1,546 miles of interstate truck routes.

The trucks traveled a total of 3,211,233 miles during the first half of this year, of which 254,833 miles were interstate.

Tonnage carried by means of railroad-operated trucks aggregated a total of 413,259 tons, of which 22,968 tons was carried interstate. Total freight revenues from this source amounted to $1,580,862, of which $88,311 was derived from interstate traffic.

The increase in the use of both buses and trucks since 1927 is shown by the commission's compilation. During 1927 the buses operated by the carriers numbered only 745, which increased in 1928 to 1,028 and 2,265 in 1929. The 2,887 buses in operation during the first six months of this year surpass the entire 1929 total.

The number of bus-miles operated was 23,725,222 in 1927; 37,491,404 in 1928; 95,371,709 in 1929; and 58,707,886 during the six months' period of the current year.

The mileage of intrastate routes rose from 2,856 in 1927 to 4,552 in 1928 and rose sharply to 23,853 in 1929 and 33,187 in the first half of this year. Interstate routes increased from 1,051 miles in 1927 to 2,751 in 1928 to 12,379 in 1929 and 23,040 during the first six months of this year.

The gain in passengers carried and revenues derived from this traffic is shown by the following figures: 34,523,684 passengers and $6,866,475 in 1927; 46,909,960 and $11,017,321 in 1928; 62,863,524 and $26,799,883 in 1929; and 34,113,361 and $14,614,011 during the first half of this year.

Trucks have increased from 141 in use in 1927 to 219 in 1928, to 413 in 1929; and 551 during the first six months of 1930, while truck-miles kept pace with 979,251 in 1927; 1,720,706 in 1928; 4,588,781 in 1929 and 3,211,233 during the six months ended June 30 of this year.

The mileage of truck routes, intrastate, was shown as 1,985 for 1927; 2,991 for 1928; 7,021 for 1929 and 8,863 for the six months of this year, while interstate routes totaled 385 miles in 1927; 524 miles in 1928; 1,128 miles in 1929 and 1,546 miles in the first six months of 1930.

The tonnage of freight carried by railroad-operated trucks amounted to 348,718 in 1927; 488,419 in 1928; 693,572 during 1929; and 413,259 in the first six months of this year, while revenues from this traffic amounted to $1,311,807 in 1927; $1,734,831 in 1928; $2,721,736 in 1929; and $1,580,862 during the first six months of this year.

The statistics deal only with the buses and trucks operated directly by the railroads, or through subsidiary companies, and are based on reports from railroads whose annual operating revenues are $1,000,000 or over —the Class 1 railroads. Returns to the commission's questionnaires from Class II and III steam railways, and from electric railways, are now being tabulated by the commission, and statistical summaries of these reports will be made public by the commission upon completion of the tabulations.

Competition in Western Washington

O. H. Barnhill

Western Washington motor trucks not only interfere with highway passenger traffic, but with rail revenues also. During the last 20 years freight in this territory has been slipping away from the railroads to public highways at a surprising rate. It is an unfavorable condition, not a disputed theory, which confronts the railroads in Washington state as elsewhere.

The extent of this freight diversion is difficult to determine. Motor truck certificate carriers alone do a yearly business of about $3,000,000 in Washington. While trade decreased in many other lines these highway haulers had a 14 per cent increase the first half of the year over the same period of 1929.

Contract carriers, many of whom are affectionately referred to by their franchise brethren as "wild-catters," say they handle 70 per cent of all the freight motor trucked in the Puget Sound region. When the quantity of goods carried by private cars also is considered, one wonders whether the box car is not destined to follow the dodo into obsolescence and ultimate oblivion. However, during crop time and other busy seasons, shippers still yell for more railway cars, which never seem numerous enough to supply peak demands. Their demise, therefore, must be indefinitely postponed.

Let's look at a few figures other than feminine and get an aviator's view of this motor freighting industry. Washington has 550 motor trucks and 100 trailers operated by franchise carriers. This highway rolling stock is valued at $2,384,000; land, buildings and shop equipment used in operating these machines, $293,000; total investment, $2,677,000; fixed capital, $2,736,000.

Truck drivers were paid $710,000 last year; shopmen and station employes, $183,000; cost of gas and oil, $346,000; tires and repairs, $307,000; station and office rent, $148,000; insurance, $70,000; gas tax, $66,000; state and county taxes, $76,000; franchise tax, $426,000; total operating expenses, $1,932,000.

Adding 20 per cent depreciation of rolling stock, $238,000, makes a total expense of $2,170,000. Subtracting this from the freight revenue, $2,988,000, leaves a paper profit of $818,000. Various other items not enumerated here would have to be deducted from this sum to determine the exact net return on investment.

These certificate carriers perform a valuable fast express service which the railroads cannot give, because of conditions impossible to alter. This

An Example of Motor Freight Service Equipment in the State of Washington. Running Over Excellent Highways Whose Cost is Shared Very Largely by Railroads, Such Service Creates Keen Competition With Steam Lines.

Luxury Provided by Continental Motor Bus Lines. These Buses Take Thousands of Passengers Who Formerly Rode in the Coaches of the Railroads.

business consists principally of picking up goods from producers, jobbers and wholesalers and delivering it direct to retailers within the former's distribution or trade territory.

So far, there is little legitimate grounds for complaint, although some such shipments can be made equally well by railroads, using trucks to pick up and deliver goods. But how about long hauls of large lots? Does not such business rightfully belong to the railroads? Is it right to divert such traffic from railways to highways, when the former can handle it as well as motor trucks?

The motor freight franchise carriers are reasonable in discussing this point.

"If the transportation business of Washington were rightfully apportioned," said John Bracklin, manager of Seattle's Union motor freight station, "this part of motor trucking would be transferred to the railroads.

"I believe it is a mistake for motor trucks to move car lots of bulky material such as coal and oil, long distances, because the railroads can handle this class of business to better advantage. Nevertheless, a great deal of coal is trucked to Puget Sound cities from mines 80 to 90 miles distant, while vast quantities of gasoline are distributed in this territory by motor tank cars. Gasoline trucks not only clutter up our highways, but constitute a needless hazard to motor travel."

Joseph Ryan, president of the Washington Motor Freight Association, takes a similar view of the situation. Although Seattle's 50 truck lines haul freight 200 miles in every direction except straight up, Mr. Ryan believes in planting a stop sign at the 100-mile line.

"The relative cost of long and short haul business for motor trucks is just the opposite from what it is for railroads," Mr. Ryan said. "Seventy per cent of the cost of railroading freight up to 85 miles is absorbed by terminal expenses, leaving only 30 per cent for transportation costs. Motor trucks have more than reversed these figures.

"As the length of haul increases over 100 miles, the proportionate cost of motor trucking becomes greater, although just the opposite is true in railroading. Tires and gas engines need a rest every few hours, which they do not get on long hauls. When running continuously, motor trucks are forced by other machines to keep on the sloping side of the pavement most of the time, which is bad for springs and tires. A short run often can be made on the level middle of the pavement when traffic is light. These are some of the conditions which make long hauls unprofitable for motor trucks."

Buses Were Busy in 1929

P. J. Neff, assistant to president of the Missouri Pacific Railroad, tells American Railway Association that bus companies handled approximately 1,000,000,000 passengers in 1929 compared with 800,000,000 for the railroads. He estimates this year's passenger revenues for the roads at $900,000,000 compared with between $315,000,000 and $320,000,000 for bus companies.

Can 500 Million People All Be Wrong?

By E. P. Bessell

I picked up a bus company time table the other day and glanced through it. I had never seen one, and did not, in fact, know that there was such a thing. What impressed itself most on what I call my mind but which my wife insists is a vacuum, was the fact that there is scarcely a city, town, village or hamlet anywhere in the United States to which a bus line does not penetrate. And how easy has been that penetration! A new road is built by the state, and along comes a bus company and uses it.

Consider, on the other hand, what it has cost the railroads in labor and money to penetrate into the various and scattered communities they now serve. Think of all the rip snorting Irish, Swede, Mexican mobs that have labored to drive through the right of way to outlying communities. Think. Oh what the

one could think of lots of things, but what started me thinking was this: According to the Automobile Chambers of Commerce, one billion 855 million passengers used motor buses in 1929. Of these 497 million were intercity passengers, and one billion 358 millions in cities.

I wonder what a railroad presi-

dent thinks about when he reads those figures. One suspects that the air is charged with electricity, and that the president would ring immediately for the operating vice president and ask for his comments. The vice president would, of course, refer it to the general manager who would pass it along to the assistant general manager, from whom it would go to the superintendent, and then to the trainmaster and he, having no one to whom the buck could be passed, would sit down and try to figure it out, which seems to be the function of a trainmaster, or why do they have them anyhow?

Well, the fact still remains that 497 million people traveled on buses in 1929, and probably more than that number will travel on them this year. A few years ago these people would have traveled by rail. Therein lies the reason for the extremely unfavorable comparison of the number of this year's passengers carried as against last year and the year before. There, undoubtedly, is the reason for the "Limited" of this or that railroad running day after day with a dwindling passenger list, and even the number of deadheads decreasing.

Personally, I cannot see why anyone should choose to ride on a bus when he can go by rail in most cases faster and more comfortably but, if 497 million people are doing it, there must be something to it. I am inclined to believe that the big reason is to be found in low fares. A comparison of the rates of fare by bus and rail to various points in this part of the country indicates that the bus fare generally is about 33 per cent under that of the railroad, and this, to the great majority of the traveling public, is no mean consideration.

From the town in which I am now living it is about 310 miles to New York City. The rail fare is approximately $12, not including sleeper, while the bus fare is approximately $8. The man or woman who contemplates a trip to New York from here, and is going to sit up on the train anyhow, would no doubt rather sit up a little longer on the bus and save the difference to spend in a New York night club.

A neighbor of ours recently announced that she was going to make a trip to Chicago. Fine! I thought, here's another passenger, and passengers are scarce. Then she let it out. She was going by bus; she living in a railroad town, and her husband making his money curing tummyaches for railroad men's children! Why, Mrs. Murphy, I inquired, but she went by bus just the same. And not only that but on her return she said that she liked bus travel so well she was going to travel that way all the time.

Some young women decided to come up from New York to see us. We live in the sticks. We're the country cousin type. These young things, much to my despair, also decided to ride the bus. Is there no end to this bus riding and me working for a railroad, I wondered? The bus, however, was about three hours late, and 15 hours on a bus was too much for the gals. They were quite demoralized when they arrived, and rose to remark that they were through with buses, to which I said, Amen!

What are the railroads doing about it? They are meeting the challenge by increasing the luxury of the appointments of their trains and by speeding up schedules, among other things. There is not a road of any importance in the United States which does not boast of at least one "Limited" train all done up in the fancy blue upholstery that seems to have caught the railroad executive's eye of late. Even in the day coaches of these trains the seats are so soft that one finds it difficult to leave in order to get off at one's station. The seats in most of these modern coaches may be turned facing the window or in any direction the traveler's fancy dictates. There are fancy smoking cars and lounge rooms with radios; solariums; cars with soda fountains, barber shops, beauty parlors, and even dance floors. This has been going on in an ever-increasing crescendo for years. Still, 497 million people rode on buses last year. Neither the operating vice president nor the trainmaster can laugh that one off.

The question of how the railroads can meet bus competition successfully is one that I cannot answer here. One way would be to buy the bus lines and operate them in conjunction with rail service, which would be simple enough if the roads had enough money to buy the bus lines and the bus line owners would sell. Another way, there being no operating vice president in the immediate vicinity, it is safe to write it, another way would be to reduce fares to meet the bus line figures, and also increase the luxury and speed of the service so that there would be no question in the traveling public's mind as to which was the more comfortable, faster and cheaper service.

Transportation which, in the olden days was a fairly high priced commodity, has reached the stage where the supply exceeds the demand. So many privately owned passenger automobiles, so many airlines carrying passengers, so many bus lines, and increased rail service, have given this country an excess of that commodity, transportation, and the price of it necessarily must come down. Until it does come down on the roads, the passenger end of the business will continue to be in the red.

The buses are giving the railroads what is really their first competition, and it will be interesting to note what will come of it. The roads are not licked on the passenger end of the business by any means. No one familiar with the men behind the railroads would say that. Increased economies of operation and maintenance are appearing almost daily. Schedules are being speeded up; on some roads concrete road bed is being considered as an aid to high speed; ball bearing locomotives are appearing. Everything possible is being done to improve the service and the traveler who rides in the day coaches today is riding in luxury that was not known even on the extra fare trains a few years ago. Old John Public has only to sit back and watch, and before you know it the roads will supply a luxury of service that even Nero never had when he traveled, and then maybe some of the 497 million will stop riding the buses. And don't forget that the 497 million mentioned refers only to persons riding between towns and cities. Remember the one billion 358 millions in cities and towns who rode buses instead of street cars or interurban lines.

Dependability

The railroad is still the center about which all transportation must revolve. The airplane and the motor truck, not to mention the canal and river, are important; none can reasonably deny this. Yet they are all merely complementary factors in a gigantic system which has its main dependence in efficient rail service.—*Meadville (Pa.) Tribune Republican.*

What Do They Write About?

Despite the slowing up of business, transcontinental air mail increased 10 per cent the first nine months of this year over 1929. So far this year Boeing Air Transport has flown 68 million letters between Chicago and San Francisco.

Some of the Motor Coaches Used Out of Atlanta and Other Cities by the Dixie Safety Coach Division of the Greyhound Lines. Note the Length of These Coaches, and the Fine Spacious Windows.

Bus and Air Service in England

A SCHEME for a combined highway and air service to link up all parts of England is being arranged by Imperial Airways, according to a report from the American consulate general in London. The The first contract has been awarded to Express Motors, Ltd., Newcastle-on-Type. This company will convey to Airways House, London, by special sleeping coaches, travelers who wish to join the Continent-bound air liners, which start at 8 and 10 a.m.

Another contract is being made with a Manchester company which operates a sleeping coach night service to London. Similar services will be available shortly to business men in every important city throughout England. The next contracts are expected to go to Liverpool, Sheffield, York, Bristol, Birmingham, Coventry, Plymouth and Southampton.

Railway Economy Scheme in England

In connection with the keen competition in England between the railways and motor transport agencies, a cooperation agreement has been reached by the London Midland & Scottish and the Great Western Railway companies for further economy in expenses. This scheme is to be applied first to railway workings in the west of England, where up until now the two companies have overlapped each other in the area served by both. In many instances great losses have been occasioned through maintenance, as, for instance, extra termini for passengers and freight where one of the rail carriers had available station accommodation for passenger trains of both companies, and where the one line had also an adequate amount of siding and equipment to deal with all freight traffic previously handled separately by both the London Midland & Scottish and by the Great Western.

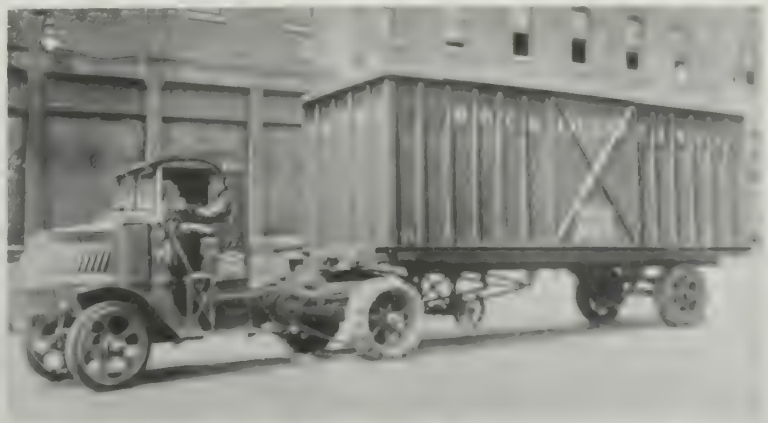
It is understood that three important stations on the London Midland & Scottish Railway are to be closed in the near future as a result of the cooperation agreement. This action strikes the first blow by the railway companies in their campaign for economy. For freight traffic at these towns an entirely new system is planned, following the suggestion that the station of one company be used for all in-bound goods and that of the other for out-bound, freight. It is probable that the results of this scheme, unprecedented in the history of the British railways, will be extended to other districts where the facilities of the London Midland & Scottish and the Great Western overlap considerably.—*U. V. W.*

Steel Ties on British Railways

Other British railways are purchasing steel ties for use on their roads, following the example of the Southern Railway earlier in the year, according to reports to the department of commerce.

The London Midland & Scottish Railway has placed an order with the United Steel Companies, Ltd., for between 500 and 600 tons of pressed steel railway sleepers (ties) of the "Sandberg" heavy type. The London & North Eastern Railway also has placed a similar order of 500 tons.

The Japanese government is expected to frown on the establishing of interurban truck lines that will interfere with the freight business of the federal railways.



A Tractor and Trailer Unit Used by the Rock Island Lines for Handling Less Than Carload Freight.

Much to His Surprise, Herbert C. Pries, a Brakeman, Won a Prize of $67,827 on His One-Dollar Race Ticket.

He Should Worry About Unemployment

HERBERT C. Pries, a brakeman, working for a company whose name was not disclosed by the photo service, invested one dollar in a share in a ticket on The Pen, in the Cambridgeshire Sweepstakes at Newmarket, England, in October. Imagine his embarrassment upon learning one night, coming in off his run, that he had won $67,827!

He is not going to buy oil stock. Indeed it is scarcely possible that he will invest in railroad securities. First, he says, he will build a home for himself, his wife and 14-year-old boy; send the boy to school, and whatever is left, if anything, is to go into four per cent government bonds. If he has the ambition of many brakemen he may then tell the trainmaster where to head in, or perhaps laugh at the superintendent. Some brakemen would give $67,000 to do this if they had it.

A Midwest Short Line

One of the unique railroads of the United States is that operated solely by J. L. Hodges and D. W. Platz over a 15 mile track from Forgan, Okla., to a point 17 miles northwest of Liberal, Kansas. The road has no regular schedule, has no special general manager, superintendent, agent, section foreman or roadmaster, but just the same it operates on a profitable basis having handled over 2,000 loads of material in 1929.

The two-man railroad, known as the Kansas & Oklahoma, is rather exclusive, yet it has a large list of unusual accommodations credited to it. Mr. Hodges is the engineer. Mr. Platz is the remainder of the road so far as help is concerned. Although the train runs only on call, last year it delivered to the Rock Island, 40 car loads of wheat for every mile of rail it owns. The road goes through a fertile valley where wheat, kaffir and cane with broom corn is grown in abundance.

Although 76 years of age, Hodges enjoys his work as engineer. He lives with his wife in Pratt, Kansas. Overton, his son, is the superintendent of the Wichita Northwestern Railways, which were built by O. P. Byers, veteran railroad builder of Hutchinson, Kansas. Mr. Byers built the Santa Fe line operating between Hutchinson, Kansas and Blackwell, Okla.

The special condition under which the train operates is amusing in some of its phases. Recently several carloads of tourists saw the train approaching a crossing they were soon to cross. The train stopped at the crossing and to the amusement of the tourists, the fireman jumped from the cab and opened a barbed wire gate across the railroad and the train passed through and the gate was closed.

The train always stops when a pedestrian is seen walking along the railroad right of way, and he is invited to ride free. When the Hodges-Platz combination become thirsty, they stop at a farm home and drink their fill at the well operated by a windmill.

Engineer Hodges worked for 35 years on the Rock Island and at the age of 70 was pensioned, six years ago.

Another Long Train

It may not be generally known but on September 14 the longest train ever hauled over the Maine Central was handled between Northern Maine Junction and Rigby, says the Employes' Magazine published by that company. This train of 142 loaded cars (137 were potatoes) with two engines made the run of 135 miles in five and one-half hours. The tonnage was 5,769 and the train transported more than 90,000 bushels of potatoes to market. Only two stops were made, at Newport and Richmond, to take water. Conductor Adelbert Callahan was in charge of the train with Enginemen William Fisher and Merle Tarr in the cabs.

This interesting contribution to the Longest Train contest was sent us by H. M. Treat, chief dispatcher for the Maine Central at Portland, Me.

Four States in 24 Hours

A new record for speed of salesmen is reported by the Boeing System. A salesman, using its Chicago-San Francisco air passenger service, delivered a demonstration talk, illustrated with motion pictures, in four cities in four states, 1100 miles apart, in 23 hours. The cities were Reno, Salt Lake City, Cheyenne and Denver.

Nationwide concern over tax reform has become lively in the last year. Special committees or associations worked on the problem in 1930 in 38 states.

D. W. Platz and J. L. Hodges are the Officers and Crew of the Kansas & Oklahoma Railroad, 15 Miles Long. It Runs Trains When They're Needed, Which We Think is a Very Wise Plan.

Little Stories About Big Men

"Sam" Heald of Panama.

NO MATTER how often you hear the old bromide about this being a small world after all, you may take the word of one who has been around a good bit of it that it was a really big construction job. One of the most interesting features, too, for the purposes of this Little Story, is the certainty that wherever you go, or *almost* wherever, you will find some former railroader from your homeland.

They aren't difficult to spot. They have a certain ineradicable national characteristic — ineradicable and inseparable from the common run — something that makes our railroaders stand head and shoulders above all others wherever they may be employed. Wherever one finds these wanderers in distant lands, they are doing things worth while. Often enough, too, they are men we need in this country. Many of them, like soldiers of fortune, are giving their talents to foreign legions because they were not moving fast enough at home. Wars, we are told, are welcomed by army and navy because they hasten promotions long deferred by peace. Sometimes you have to go away from home to be valued properly.

Travelers have said, in reminiscent moments, that one of the chief delights of journeying here and there is the frequent meeting with men from home in out-of-the-way corners of the world. This chronicler has found American railroad men everywhere—in Suva, capital of the far-distant Fiji Islands; in ill-smelling Canton, China; in Manchuria; and one, a former conductor, running a restaurant, in Hong Kong. There's one of them now away down in Panama, a former Chicago & North Western man; been there twenty years or more. It's a great yarn.

A boy of twenty years, who had just completed his first year at Cornell College, Mt. Vernon, Iowa, in 1888, yielded to the lure of adventure, which was, to him, personified in the roar of passing trains, the shriek of locomotive whistles and the swing of a brakeman's lantern. Against his father's protests and his mother's tears, the lad quit school, left home and donned overalls and greasy cap to become a brakeman on the Chicago & North Western Railway.

To his playmates in the Iowa schools, the boy had been "Sam" Heald; to his fellow workmen on the C. & N. W. he continued to be "Sam" Heald; and to this day, while he occupies one of the highest executive positions with the Panama Canal government, he still remains "Sam" Heald. It is only in extra dignified official communications that he is referred to as Samuel W. Heald. In his daily contact with men, women, neighbors, workmen, and in officialdom, too, any addition to the familiar "Sam" would hurt his feelings, and rob thousands of friends of a genuine belief in their right to this familiarity with the man who, by merit and fidelity to duty, has risen from the ranks of railroad workmen to be the superintendent of one of the important lines of rail and ship transportation.

IT WAS not as easy in 1908 to persuade capable men to accept permanent positions in Panama, as it is today. The isthmus was, at that time, still in the stages of mud, ma-

—By Burton Holmes for Ewing Galloway.

The Big Train Shed at Madrid Reminds One of La Salle Street Station, Chicago.

laria and madness. The chances were about even whether a newcomer would, in a few months, be sent to the cemetery on Monkey Hill, become a helpless beachcomber via the rum route, turn violently homesick and rush back to the States, or prove immune to the dangers, discouragements and temptations of the tropics, and make good as a permanent member of the organization which was carrying on the greatest engineering and construction effort of the age.

Hiram G. Slifer, who was then general manager (the title has since been changed to superintendent) of the Panama Railroad, was in dire need of steady, dependable men who knew railroading; for in canal construction, as in war and other big activities, the success or failure of almost every effort depends largely upon the efficiency of operation of the lines of transportation and communication. *One* of Slifer's most urgent needs in April, 1908, was a yardmaster. In casting about for a likely candidate for the job—one with the kind of qualifications necessary to buck the adverse conditions existing—Slifer's mind went back to his old crew on the Chicago & North Western, and there, looming up in his memory, was just the man he needed—Sam Heald. A cable was dispatched—"Will you accept position yardmaster Panama Railroad two hundred a month?" The answer was characteristic of Sam's directness of speech, quickness of decision and courage of action. The cable Slifer received merely said, "Hell, yes. Sam."

Mr. Slifer was a notoriously profane man, and upon Heald's arrival in Panama, after formal greetings were over, he remarked: "Sam, you are getting worse than I am; you even swear by cable."

THERE was nothing strange or spectacular in the rapid rise of Sam Heald through the positions of yardmaster, trainmaster, master of transportation and finally to superintendent, during the eight years from 1908 to 1916. It was natural for Sam Heald to rise. His predominant characteristic made him a leader of men; his manner inspired confidence; his record was one of action; his methods, as applied to both men and material things had proved his level-headed soundness of judgment.

Prior to 1916 all superintendents in Panama were political appointees, and political influences still were seeking control of that all-important office. But no political influence was strong enough to outweigh Sam's qualification; and so, in the eleventh or twelfth year of his executive administration of the Panama Railway and Steamship lines, the same qualities which first placed him at the head of the railroad are still keeping him there, seemingly as firmly intrenched in the official position as he is in the hearts of his employes and staff associates.

Up here in the North a railroad superintendent is an important man. For most folk along the line he is, indeed, the whole railroad personified. The president, usually, is just a name, a mythical sort of personage few men ever see. For the townspeople the company's station agent and the division superintendent are the important men. Down in Panama, far from the spot many still think about as "back home," the superintendent is indeed one of the Big Men. He can be a tyrant and fail to hold his men, or he can be human and a leader, depending on what is under his vest. He can have flocks of friends, or enemies everywhere—and this is true, of course, wherever we are. In Panama, it pays to have friends, and Sam Heald seems to have gained and kept many.

Don't make any mistake, you railroaders, when you read about this

Panama superintendent. Up here the man in such a job can wire or telephone a superior authority if he finds himself in a jam, as happens sometimes. Down on the isthmus the superintendent of the railroad is pretty nearly the whole works, the brass collar and the high hat superintendent, general superintendent, and general manager. Of course, there is a president, H. Burgess, with headquarters at Balboa Heights, and a second vice president, J. L. Schley, at the same place, but when these have been accounted for you have to go to New York for the remainder of the Panama Railroad. The superintendent, the Poo-Bah of isthmus transportation, with one assistant, R. Beverley, is very nearly the whole thing, according to old railroaders who have been down there, looked about, and come back talking about this combination superintendent and other things.

Sam Heald has done much more than superintend the Panama Railroad and represent all the steamship lines in sight, and in the doing has made a name for himself.

THE WORLD was too much engrossed with its wars to pay much attention to the great earthquake of December, 1917, and January, 1918, which laid waste the city of Guatemala, cost the lives of thousands, and left other thousands homeless. Guatemala was remote from the United States; shipping and resources were taxed to the utmost in supplying and transporting war materials and supplies. Sympathy seemed to be about the only thing which the United States could send to Guatemala quickly.

It was Sam Heald who offered the solution to the relief problem when he cabled to Henry P. Davidson, then head of the American Red Cross, that $200,000 worth of Panama Railroad commissary supplies could be made available for relief of Guatemala earthquake sufferers, and could be delivered to them in six days in a Panama Railroad steamship. Permission to do so was at once cabled; the supplies were loaded, and Sam, as chairman of the Red Cross, accompanied the relief expedition and superintended the dispensing of supplies, to the hungry, the injured and the homeless. He took immediate charge of the erection of tents and temporary shelter; he helped to establish hospitals and get the various groups of relief works organized and functioning efficiently. He accomplished this work in the same cool, level-headed, methodical manner which had marked his handling of big emergencies in the management of the Panama Railroad.

A MAN IN authority in Panama wouldn't amount to very much, you see, if he merely superintended the railroad. The whole property could be tucked away conveni-

Colonel B. L. Bugg,
President, A. B. & C. Ry.

ently in the Southern Pacific yards at Los Angeles. It isn't the length of the line that makes a man. It's how he manages what he has in his charge, and how valuable he can become to the whole community.

It was this qualification, this all-round usefulness, and a fine understanding of the duties of citizenship that entitles Sam Heald to a place in Little Stories. Manuel Cabara, president of Guatemala, recognized and valued those qualities and proved it by giving the American a handsome and famous Spanish sword made in 1821 as an expression of his and his countrymen's gratitude for Mr. Heald's services following the earthquakes. That sword hangs today on the wall of the Heald home in Ancon. It is safe to predict that grandchildren and great grandchildren for generations far in the future will cherish it and tell the tale of the ancestral superintendent who won it by going to the rescue of suffering thousands.

WHAT kind of job is this of Mr. Heald's? The available record shows that as superintendent of the Panama Railroad he has under his supervision all docks on both sides of the isthmus, the coaling stations, and all the land. And remember the Panama Railroad owns all the land on which the city of Colon is situated, as well as much of that upon which the city of Panama stands. Also this superintendent has the management of the Panama Railroad Steamship Line, and moreover is agent for 26 other steamship lines. What he does during idle hours we do not know. But it must be something worth while because the principal newspaper down that way said in a story about him that although he has become known to people in many lands as S. W. Heald with his title, on the isthmus, where he has lived so long, he is known as Sam, and that "his years, the dignity and importance of his position, have not robbed him of the homely qualities which have endeared him to officials in high places, to employes in overalls, and surely to the children in the street."

You may earn big salaries, some of you; you may have more important positions; but you haven't much to boast about, you can't expect bright jewels in your crown hereafter, if you draw one, if you have missed the regard of your own people.

Cato; you remember the man the Romans called from the plow to the senate? Cato said the greatest comfort of his old age was the pleasing remembrance of the benefits and friendly offices he had done for others. Sam Heald must have such memories—many of them.

MEN OUT of work and out of money must wonder sometimes over the maddening lack of speed shown in every so-called relief plan for the unemployed. A fine contrast to this governmental red-tape and official hooey was shown early in November when Col. B. L. Bugg, president of the Atlanta, Birmingham & Coast Ry. borrowed $50,000 to start work at once in equipping the company's shops at Fitzgerald, Ga., with electricity. Colonel Bugg says those who put off worthwhile improvements at such a time as this are making a serious mistake, because that work would not only give much needed employment to worthy men, but would be a good business investment, made at relatively low cost, and would put the organization in good condition to push business actively when the revival begins. In this connection Colonel Bugg gave this remarkable chunk of wisdom from the late Fuller E. Callaway, one of the master builders of Georgia, whose business life was a conspicuous success:

"Mr. Callaway once said to me," remarked Colonel Bugg, "whatever success I have had in material things was due to the fact that I have in almost every instance gone contrary to the general course of the public. When everybody wanted to buy, I sold. When everybody wanted to sell, I bought."

Colonel Bugg added that in a time of deep depression of the textile industry Mr. Callaway built a new mill. He built it very economically and by the time it was finished business was reviving. In the first year of operation he almost paid for the mill with the profits.

WORDS ARE strange things. No matter how modest a man may be, ostensibly, he is nevertheless, deep down in his heart, pleased to be included among those called "Big" men of the Little Stories.

But what about the women? If a man has learned anything at all about them by the time he is 50 certainly he knows better than to call a woman "Big." It isn't done—safely.

Just another of the problems that editors have to solve. Here, for example, is a group of women holding executive positions entitling them to inclusion among the "Big." But we're not going to run any such risk—not while juries continue to be the final judges in libel suits.

We have with us today, ladies and gentlemen, Mrs. Thomas W. Beckett, president of the North Carolina Railroad, a line owned by the state

Belt Line Tracks at the Ferry Building, San Francisco.

of North Carolina and leased to the Southern Railway. Mrs. Beckett is the widow of a former governor of North Carolina. Recently she was admitted to the bar. In our opinion the interesting feature of this brief history is the fact that when Mrs. Beckett finished her studies of law and began to practice she was 60 years old. At least, a southern paper *said* that was her age.

Phebe Clark of Nashville is president of the Tennessee, Kentucky & Northern Ry. True, the line is not very long, only 20 miles, but it is an ideal little property in some respects. The fact that the president is a Quaker may have had something to do with it but, anyway, the T. K. & N. has never had a strike; does not operate on Sundays, and loses no money for anyone. Sounds queer, but that is our story and we're going to stick to it. The road was unprofitable until President Clark took charge and started to thee and thou the employes. And here's the usual feature needed in any good yarn: Phebe Clark does her own housework while presidenting the railroad.

The widow of Col. William Boyce Thompson was elected president and chairman of the board of the Magma Arizona Railroad Co., in October. This line is only 22 miles long, but the officers of many a larger road would glow all over if they had its traffic—mostly copper.

Until 1927, for several years, Mrs. Sarah Edenborn was president of the Louisiana Railway & Navigation Co., now the Louisiana, Arkansas & Texas Ry. This was then the longest railroad operated by a woman—204 miles.

There are or were others. Mrs. J. L. Lovvorn is president of the Bowdon Railroad Co. in Georgia. This is a 12-mile line owning two locomotives and two passenger cars.

For five years ended with 1925 Mrs. Cora B. Williams was president of the Georgia, Florida & Alabama, now a part of the Seaboard Air Line, and Mrs. Grace E. Jones Stewart headed the Gulf & Ship Island R.R. now in the Illinois Central System.

However, there really isn't anything very remarkable about a woman being the head of a railroad. Practically everything on the line, beginning with the locomotives, is called "She." Why not the president?

State-Owned Belt Line at San Francisco, Which the Southern Pacific and the Western Pacific Have Tried to Buy. The Proposals Were Disapproved by the State Railroad Commissioners.

The Modern Trend of Railroad Regulation

By Kenneth F. Burgess

—Harris & Ewing Photo.

The United States Supreme Court. Seated: McReynolds, Holmes Taft, Van Deventer, Brandies. Standing: Sanford, Sutherland, Butler, Stone. Since This Was Made Chief Justice Taft and Justice Sanford Have Died.

THERE HAS been comparatively little new railroad building in the United States since the 90's. Yet the growth of railroads up to the close of this construction and development period has been remarkable. Within the space of the life of a man, the transportation industry had made phenomenal strides. In 1812 a committee of eminent engineers was appointed to give study to the possibilities of railroad development, and they reported it seemed impossible to them that any roadway could be built capable of withstanding the strain of hauling 100 tons at the rate of four miles an hour. Even Daniel Webster feared the frost on the rails in the winter would be an insuperable obstacle to the movement of a locomotive. Yet before the close of the century more than 200,000 miles of railroad was being operated, and it was no unusual thing to see freight trains with a gross weight in excess of 2,500 tons moving at 20 miles an hour or more.

This first period of railroad construction and development was indeed remarkable. It was a period in which the effort of the public was to encourage in every possible way the building of more railroads. Toward the close of the period the public developed a marked hostility to railroad management, beginning with the so-called granger movement of the 70's when the prices of farm products were at a low level. Some of the western states passed laws reducing freight rates, and some few of them created commissions to regulate the railroads. Such regulation as was practiced during this period, however, was largely legislative regulation. As the period of railroad construction and development came to a close, a revulsion of feeling was created against the policies and methods pursued by the railroads, which had been but the natural result of the history of the times and of the methods by which railroads were then regulated, that is, by direct legislation.

The second era of railroad history was the period of commission regulation of rates and service. It really came into full force and vigor with the so-called Hepburn Act of 1906, which put an end to rebating and gave to the Interstate Commerce Commission the power to enforce its orders prescribing reasonable rates. It was a period in which the public, through the medium of commissions, sought to regulate both the rates and services. The public realized that the method of regulating railroads by direct act of the legislatures was a failure. It found the problem one requiring careful study by men who would have a continuing responsibility. Therefore, it provided for commissions made up largely of laymen. The theory was that these commissions would express the judgment of the public and that they were representatives of the public. The attitude of the courts from the outset was that they would not interfere with the decisions of these commissions unless some principle of statutory or constitutional law was involved. The primary function of these commissions was to pass upon the reasonableness of rates, the adequacy of service, and in some instances to determine the value of the railroad property, because it was recognized that rates should bear some relation to a return on value.

The third and last era in the development of railroad regulation was the post-war era, and it is from the developments of this period that we must determine the present and future trend of railroad regulation. It is characterized by two conflicting and, I think, wholly inconsistent tendencies. The first of these was an enlargement of the jurisdiction of the Interstate Commerce Commission to include not only the regulation of rates and service, but the regulation of railroad management as well. The Transportation Act of 1920 accomplished this. Among other things it extended the jurisdiction of the commission to the field of management (a) by curtailing the powers of the state commissions and giving to the Interstate Commerce Commission a sort of supervisory jurisdiction; (b) by authorizing the regulation of issues of securities, stocks and bonds; (c) by regulating the sale and acquisition of railroad property; (d) by providing that no construction of new railroads or abandonment of old rail-

Part of an address before the St. Louis Railway Club. Mr. Burgess is general solicitor for the Chicago, Burlington & Quincy Ry.

roads should take place until the commission approved; (e) by giving to the commission jurisdiction in the matter of consolidation of railroads; and (f) by providing that permission must be obtained from the commission before one man could act as director of more than one railroad. The commission has also in some instances asserted the right, under this act, to pass upon matters of efficiency and economy of operation. In one of the first decisions of the United States Supreme Court concerning this enlargement of power, Chief Justice Taft characterized the law as a "new departure" in which the carriers were "brought more than ever under the fostering guardianship of the Interstate Commerce Commission."

As a result of these things the railroad business became more than ever a public business. The railroads continued to be operated by private corporations, but these corporations and their officers were subject to such a sweeping power of regulation that it was enforced upon them, from the railroad president down to the most humble track laborer, that they were employed in the public business.

The enlargement of the jurisdiction of the Interstate Commerce Commission was upon the theory that the commission should be more than ever responsible to the public for the continued maintenance of adequate transportation. Congress believed that the best interests of the country required that this commission, which theretofore had been regulating only rates and service, should now be responsible to the public to see that the railroads were well run and adequately maintained, not only for the present, but for the future as well. The principle of commission regulation was retained.

Five years later, or in 1925, there developed the second tendency of this third era, a tendency in fundamental conflict with all that had gone before. It may be described as a period of congressional, or better perhaps of senatorial, interference with railroad regulation. Remember these commissions had been created to constitute boards of continuing responsibility, whose members should, through their years of service, become well informed in railroad matters. The evils of trying to regulate the railroads by direct legislation had been thoroughly demonstrated in the first era. Not only had direct legislation driven the railroads into politics, but by its very nature it had resulted in the enactment of unwise and in many instances of injurious laws. Special laws were passed to serve special purposes. Sometimes they were passed to satisfy individual grievances. I have in mind one legislator who, while traveling on a pass as a caretaker of live stock, was left at an intermediate station by the train crew as a joke. He was so angry about it that at the next session he had a law passed providing that thereafter the railroads should always stop their live stock trains so that the caboose should be opposite the waiting room, and that the conductor should escort the caretaker back and forth. The development of the commission form of regulation had been favored by the public to overcome evils of direct legislation.

Yet, beginning in 1925, we have had a new and discordant note sounded and repeated in respect to this theory of railroad regulation. From 1920 through 1924 the Interstate Commerce Commission and the state commissions heard and decided a number of cases involving the demands of farmers for reductions in the rates on the products of the farm, ranch and orchard. Grain rates were reduced in amounts varying from 15 to 20 per cent, and other rates on the products of agriculture were subjected to large reductions. All of these cases were decided upon voluminous records, after careful investigations by the regulatory commissions. Yet, in January, 1925, congress passed a joint resolution, known as the Hoch-Smith Resolution, in which the Interstate Commerce Commission was directed to embark upon an entirely new undertaking. No one yet knows exactly what this resolution means, but it did declare that the commission should, with the least practicable delay, put into effect the lowest possible lawful rates on the products of agriculture, and that in making rates for the future it should take into account the present and future conditions of particular industries which ship freight. This resolution was described recently by one of the members of the Interstate Commerce Commission as undertaking to make the railroads a sort of economic shock-absorber for the country. If it be interpreted literally it is perfectly impossible of execution, because the railroad commissioner of the future would have to become a sort of clairvoyant. He not only would have to investigate as to the internal conditions of every sort of industry which shipped freight, but he would have to prognosticate as to the future of industries in order to determine what would be necessary and wise. Since this resolution was enacted, the whole processes of the Interstate Commerce Commission have been devoted largely to investigating these economic conditions which do not concern railroad transportation, except in a remote degree. Whatever it may finally be held to mean, it is perfectly clear to any student of the situation, that the Hoch-Smith Resolution was in essence a criticism by congress of the judgment of the commission in the cases it had been deciding on voluminous records after careful investigation, and was passed upon the solicitation of unsuccessful litigants and their political supporters.

The second example of this sort of senatorial interference with the processes of regulation is epitomized in the so-called Wheeler Resolution, passed by the senate May 3, 1928. Therein, the Interstate Commerce Commission was directed to report as to whether the rates on grain and livestock in Canada would not be compensatory for American railroads in the Northwest, and, if they would be, to reduce the rates of American railroads to the basis of the Canadian rates. The Interstate Commerce Commission had already made a report on this matter in respect to the grain rates, showing that the railroads of Canada were exempted from taxation by the Canadian government upon an agreement that they would make low grain rates. The really humorous part of the Wheeler Resolution, which shows how impossible it is to regulate these railroads by direct legislation, was the inclusion in it of reference to the Canadian rates on live stock. The fact of the matter is that the rates on live stock in Canada are very much higher than the rates on live stock in the United States, a matter well known to the Interstate Commerce Commission. Yet the senate of the United States, which, of course, is not skilled or acquainted with technical matters of railroad regulation, adopted this formal resolution, indicating its desire that the rates on live stock in the United States should be the same as those in Canada. This is another example of legislative interference with the processes of regulation by commissions.

The third example to which I will refer is even more striking. One of the outstanding features of this third, or post-war era of railroad regulation, has been the tremendous decline in passenger traffic. The inventive genius of the American people has developed the automobile and provided magnificent highways and this in turn has had a marked effect on passenger travel by railroad. In 1920, the western railroads received in passen-

ger revenue $526,000,000. In 1928, this was reduced to $297,000,000, a decline of 43 per cent. It was not so much the automobile bus, but rather the privately owned automobile, which resulted in this loss of passenger business. The short-haul passenger business had almost disappeared and it probably is gone forever. The long-haul passenger business has also been affected. Faced with this situation, the Interstate Commerce Commission, in order to provide in part for adequate revenues, decided in 1920 that the railroad companies should make an additional charge against passengers riding in Pullman cars, known as the Pullman surcharge. In 1924, the reasonableness of this charge was attacked by an association of commercial travelers, and the Interstate Commerce Commission entered upon a prolonged investigation into the matter, during the course of which it held hearings from Portland, Maine, to Portland, Oregon. Finally, in January, 1925, it rendered its decision to the effect, first, that the reduction in passenger revenues by reason of the loss of the short-haul business, was such that the railroads needed to continue to charge the Pullman surcharge; second, that the value of the service which the Pullman passenger received was such that it was proper that he should continue to pay this charge; and third, that the charge was reasonable from the standpoint of the cost of the service. These commercial travelers then resorted to congress and in each of the subsequent sessions the senate committee on interestate commerce has held long hearings concerning the matter of the Pullman surcharge, in which it has virtually undertaken to retry and review this decision of the Interstate Commerce Commission. Twice bills providing for the legislative abrogation of this Pullman surcharge have been passed by the senate, but failed to pass the house. I mention this because it is a striking and glaring exinterfere with the processes of comample of the present tendency on the part of legislative bodies not only to mission regulation, but actually to undertake to retry these cases in the limited time which the legislative sessions provide.

The fourth example of this modern tendency is to be found in a resolution passed by the senate May 7, 1928, and directed at the Supreme Court of the United States. There was then pending before the Supreme Court a case known as the O'Fallon valuation or recapture case. It involved conflicting theories as to the value of railroad property. The Interstate Commerce Commission had made an order against the carriers in which, broadly speaking, it had expressed the view that the value of railroad property was to be determined upon the basis of its reproduction value at pre-war prices. The

Kenneth F. Burgess

position of the railroads was, again speaking broadly, that this decision was wrong because it failed to take into account in adequate degree the increased cost of reproducing railroad property at the present time, on the basis of present labor and material costs. In the court below an association of representatives of certain farm and labor organizations and others, called by themselves the National Conference on Valuation of American Railroads, had appeared by counsel and had presented a third view. This view was that the value of railroad property was not a matter for judicial determination at all, but that its value would depend upon the rates it was permitted to receive. This association was represented in the lower court by a Chicago lawyer, named Donald Richberg. When the case reached the Supreme Court, the parties filed their briefs and Mr. Richberg filed his brief as a friend of the court. The Supreme Court has a rule that persons filing briefs therein as friends of the court will not be permitted to argue orally. So Mr. Richberg resorted to the senate and in response to his request the senate very promptly passed a resolution by a vote of 46 to 31, requesting the Supreme Court to waive its rule and hear from Mr. Richberg orally. I say that this is legislative interference with the processes of regulation with a vengeance.

The fifth and final example of this modern tendency to which I wish to direct your attention is the present attitude of the senate in respect to the confirmation of reappointments to the Interstate Commerce Commission. Early last year Commissioner Esch was reappointed to the commission by President Coolidge. His appointment had to be confirmed by the senate and when the appointment was referred to the senate committee on interstate and foreign commerce, it held a protracted hearing which amounted to a retrial of a certain rate case known as the Lake Cargo Coal Case, in which Commissioner Esch had voted with the majority of the commission. The parties who had appeared before the commission in this case were heard and finally, because the senate did not seem to approve the decision which had been made, the reappointment of Commissioner Esch was rejected. Some few months thereafter another commissioner, Mr. Aitchison, was reappointed to the commission, and again the senate committee on interstate and foreign commerce held hearings inquiring into the views which this commissioner entertained on telephone valuation and other matters. His reappointment was finally confirmed, but the effect of this sort of procedure upon the independence of the commission remains to be seen.

This, it seems to me, is the modern trend of railroad regulation. How far will it go? What will be its effect? Will it drive the railroads back into politics? Will it destroy the whole theory of commission regulation? I am not enough of a prophet to undertake to answer these questions.

Must the Railroads Pay?

Their attention attracted by the screams of horrified spectators, trainmen saw a young man fall under a Y. & M. V. freight train at Tchula, Miss. The trucks of three cars ran over his left leg before the engineer could stop his engine.

Willing hands lifted the boy tenderly and carried him to an automobile.

Their horror changed to amazement when he smiled at them and said:

"Thanks, now will you get me another one?"

"Another what?" some one asked.

"Why, another leg," he said, "that one was wooden."

He said his name was Hawthorn and that he lived in Chicago.

Railroads Ask for New Spirit

A REQUEST that legislative and regulative authorities adopt "a new attitude" toward the railroads was made Nov. 20 in a meeting at New York by the Association of Railway Executives in unanimously adopting a policy in respect to transportation. The following statement was authorized:

"Without referring to or including in any way the results of the business depression of 1930 railroad freight traffic during the 30 years ending in 1920 increased more than seven per cent annually, while during the nine years from 1920 to 1929, inclusive, the average annual increase was less than one per cent. At the same time passenger traffic showed an almost steady gain to 1920, the annual increase over the preceding 30-year period being more than six per cent. During the nine-year period ending in 1929, there was an annual decrease of more than three per cent per year. From 1920 to 1929, inclusive, there has been an increase of more than 181 per cent in the number of passenger automobile registration and nearly 236 per cent increase in the number of motor trucks in operation. Reports also show an increase of from 10,000 motor buses in operation in 1920 to 92,500 in 1929 or an increase of 825 per cent. Intercoastal tonnage through the Panama Canal increased from 1,372,388 tons in 1921 to 10,119,028 tons in 1929 or an increase of 637 per cent. There also was an increase from 83,152,182 tons in 1920 to 160,927,905 tons in 1928 or 93.5 per cent in the amount of traffic moved over inland waterways.

"Contributing factors to the decline that has taken place in the amount of freight traffic handled by the railroads have been the pipe lines, high-power electric lines and the newest development of the piping of natural gas from the wells to large centers, which still further will reduce coal traffic.

"In so far as any form of the service described is legitimate, and a natural economic development, the railroads have no right to complain. The public is entitled to the best transportation at the lowest reasonable cost. However, where the rail carriers are prevented through legislation or regulation from fairly competing with new or old forms of transportation, or where the service rendered by the competitor is a subsidized one, such unfair handicaps should be removed.

"The foregoing refers to loss of traffic through competitive reasons. Traffic that remains has produced the following results. Average receipts per ton mile declined 15.6 per cent between 1921 and 1929, resulting in a cumulative loss to the railways of $5,769,835,000 in freight revenue during that period, closely approximating what has been spent for capital expenditures which have amounted to $6,855,416,000. Operating expenses per traffic unit handled were reduced 21.2 per cent between 1920 and 1929.

"This reduction in operating expenses per traffic unit has been accomplished largely through the enormous expenditures for capital improvements in the nine year period which provided improved locomotives and equipment, improvement in the physical structure, improvement in methods, and done in conformity with the program of the railroads entered into in 1923.

"Notwithstanding this economy and efficiency, rates have never produced the return on property investment contemplated in the Transportation Act, namely, 5¾ per cent, for the railroads as a whole. The rate of return on property investment in 1926 was 4.99 per cent, the highest for any year since the war. The rate in 1929 was 4.84 per cent while for the first nine months of 1930, it was 3.54 per cent.

"Reductions in rates, beginning with 1921, have continued up to the present moment. These reductions were brought about by action of the Interstate Commerce Commission; through reductions made voluntarily by the carriers to meet competition, including that of unregulated or subsidized transportation, and through reductions made voluntarily by the carriers for the development of industrial enterprise and communities.

"What the railroads are asking is a new spirit and attitude on the part of legislative and regulative authorities through a recognition that the railroads are engaged in a business subject as other business is to the operation of economic laws, and should accordingly be permitted to adapt themselves quickly to changes in economic conditions which confront them, and through a recognition that railroad operation is a fundamental public necessity and that the maintaining at all times of an efficient national system of transportation, adequate to the business needs of the public, is necessary, if we are to progress as a nation."

It's the Railroad's Turn

As related in these columns last month the western railroads informed the Interstate Commerce Commission in a special statement that at no time since 1920 have western railroads earned the fair return allowed all carriers under the provisions of the Transportation Act of that year. It was emphasized that the situation was such that the railroads could no longer continue to support the burden of freight rate reductions and the situation which would result from the lower rates on grain ordered by the commission in its recent decision in the Western Grain Case. Losses in revenues from this rate readjustment, it was said, would amount to about $20,000,000 a year.

The commission has replied to this effect:

We note your purpose in submitting the statement is not to affect the decision of pending cases; and, of course, any such matters must be considered and passed upon by us upon the records in those proceedings, conformably with the law and settled practice of the commission. The purpose of your statement is:

"* * * simply to bring these concrete facts to your (our) attention that they may be given consideration in your (our) administration of the duties which congress has directed the commission to discharge," and that we give to the facts so presented the weight to which they are entitled in administering the grave responsibility which congress has placed upon the commission.

The matters to which you have directed our attention are important, and are such that we have borne in mind and will bear in mind for appropriate consideration in the administration of this act. The statement makes no suggestion as to any action by us deemed by you to be feasible to relieve the revenue situation of the western railroads or legally necessary in the premises; should such request be presented, it will be given earnest and prompt consideration."

The Curtain Lecture

R. C. SHIMMIN

Whistle, whistle, whistle.

"Hey, where do you think you're goin'? Don't tell me that, brother. I gave the signal before you entered the intersection. Just draw into the side there, will you?

"Say, is this the first time you've driven a car?"

"No-o-o-o"

"Then there's no excuse whatever. A deliberate violation of Traffic Ordinance 14. You're eyesight pretty good, is it?"

"Ye-e-e-s."

"You could see me standing in the center of the street with me arms wide extended?"

"Ye-e-e-s—but—"

"Then you done it on purpose. You done it absolutely deliberate. And you thought you could get away with it, didn't you?"

"No-o-o—I tell you—"

"Talking back, eh? Want to argue, do you? Is *that* so? Are you from the country?"

"No-o—"

"That makes it worse. There ain't no excuse whatever. And say, you're double parked now. What have you got to say about that?"

"Well—you told me—"

"I told you to double park! That's a good one. That's the best I've had today. Say, my friend, you're on the road to the penitentiary—a respectable looking gentleman like you, too. Got any children?"

"Ye-e-e-s—"

"Then for their sakes try to live a decent life. Crime don't pay, brother. Try to keep within the law. For the sake of your wife and children and those gray hairs I'm goin' to pass this up, but next time— Now beat it. Go on."

"Production calls out man power; production is not called out by man power."—*Henry Ford.*

Editorial Comment

Whatsoever a Man Soweth—

A LETTER came in the morning mail from an old-time railroad man. It is not a letter of complaint. The man doesn't seem even to suspect that he is a victim of poor judgment, ingratitude, the disloyalty of his employers. His letter is merely a very touching inquiry about the chances of getting our help in finding a new job. It is a personal letter, so the writer's name is no one's business. For the present the writer of this human document bears the same relationship to other idle railroaders as the Unknown Soldier bears to the army and navy. Here is a paragraph, with a few words deleted, that ought to make you think seriously; it doesn't matter whether you are an officer or an employe, designations we never have been able to comprehend, both being hired for wages. Read this:

The new owners of our railroad seemed fair-minded enough at first. But during the last two months they have changed their policies in every way, and now seem determined to get every cent of profit possible regardless of the general effect on the employes. Nearly a third of the men have been laid off, and the movement still continues. No one seems to know where it will stop.

With winter upon us, in the midst of an economic depression, with a family to support; having spent all my salary for education and a home for the children; with my hair gray and my eyes not so strong as they used to be; after giving twenty years to one kind of work, I find myself thrown out.

About the time that letter was written the executives of all the principal railroads were issuing a statement in New York asking the government for relief of many kinds. Particularly, the executives asked for these special forms of consideration:

A respite from rate reductions and suspensions by regulating bodies, both intra and interstate, and from action that will increase the expenses of the carriers.

A respite from legislative efforts of either the national or the state legislatures that would adversely affect rates or increase the expenses of the carriers.

When President Hoover asked the executives to reduce rates on agricultural products, chiefly grain, and feed for live stock, the request, being indeed a command, was complied with immediately. Having hauled about 50,000 cars of such traffic for the farmers, gaining meanwhile the applause of the nation as generous and unselfish patriots, the executives, in an astonishingly large number of cases, began laying off shop forces, abolishing departments here and there, throwing thousands of faithful employes out of work at the beginning of winter. This was called economy. Farm relief, apparently, at least so far as railroads are concerned, has been given generously at the expense of the men and their families.

Since the day it was established this magazine, read in every state and in many foreign countries, has defended the railroads against unfair criticism from every source. But it finds it difficult now to discover any extenuating circumstances to justify this disloyalty toward the forces that have made American railroads the best in the world. The reports show that 161 railroads are using a quarter of a million fewer men now than were employed one year ago. The exact number employed in September, 1929, was 1,747,816; in September, 1930 only 1,485,906 had jobs. This means that many railroad families are suffering. We have heard of no reductions in the executives' salaries.

Who is responsible for these conditions? Certainly not the presidents of these properties. These officials have done what they were compelled to do by the chairmen of the boards in New York, and these gentlemen, in turn, have issued their unwise orders because the money interests of Wall Street have demanded such action. Why was this demand made? Because the price of railroad securities must be kept up by a better showing in the yearly reports. Stockholders are tired of waiting for dividends. And why are there no dividends in so many cases? Because, under the present rate schedules, the roads have earned less than 4 per cent on their investments. And why are the rates so low? Because the rate making and revising authorities at Washington, the Interstate Commerce Commission, and the state boards of railroad and utility commissioners, have kept them down or reduced them.

That reads like a fairly good defense for the railroads—and much more might be said along the same lines—but why make up the losses by laying off thousands of men? Why abolish departments some roads have been twenty years or more in perfecting—fuel conservation, for example—why reduce public relations work at the very moment when such work is most important, to mention only two or three instances? If these departments, some of them costing millions, are not necessary now they were not justified ten, fifteen or twenty years ago, and the men responsible for their being organized were wasting stockholders' money.

The chairmen of the boards, managing the financial affairs of properties worth billions, occupy positions of very grave responsibility. As they are men it is, perhaps, not quite fair to expect perfection. The atmosphere in which they live most of the time is not conducive to that high degree of human expansiveness and sympathy to which the railroad employes are entitled. The chairmen, it seems, do not always remember that no great industry, no great manager, ever can dissociate himself entirely from the employes in order to advance the interests of the stockholders.

It can not be done—safely—and this is a particularly hazardous time to try it. With the principal labor organizations discussing extremely dangerous proposals, with unemployment causing suffering, discontent and resentment in many parts of the nation—surely this is no time to throw fuel on the fire.

It is very doubtful whether at any other period in the world's history has it ever been so important to apply the Golden Rule in management, to remember the Sermon on the Mount. And, if, perchance, any of the chairmen have forgotten this great preachment on human conduct we suggest in the friendliest way that they read it again and ponder.

Every competent editor has a Bible on his desk. It would be a fine addition to the office equipment of the chairmen. No manager, especially in New

York, should overlook the sixth chapter of Galatians, seventh verse. To avert the necessity of sending out for the Book we give the lines here:

Whatsoever a man soweth that shall he also reap.

This is no time to look for trouble. It is just around the corner.

An Engineer's Chances With Uncle Sam

The United States government is the largest employer of engineers in the world and the federal civil service alone utilizes more than 3,500 members of the profession, Thomas E. Campbell, president of the civil service commission, said Nov. 19 in an address before the Washington Society of Engineers.

The outstanding appeal that the federal civil service makes to the engineering graduate is the opportunity it affords for constructive public service.

The civil service of the United States will not make you rich. The entrance salaries offered to recent graduates are quite as good as, and often better than, those paid in private employment. Demonstrated ability is rewarded by promotion, but around $9,000 a year is the limit in the classified service, and few, of course, attain that grade. But the government service offers a wide field of opportunity where individual tastes may be developed and where real constructive work may be done.

Alaska Railroad Deficits

Losses continue to pile up for the government in the operation of the Alaskan Railroad, according to the annual report of Gov. Parks of the territory to Secretary of the Interior Wilbur made public November 22.

The operating deficit for the 521 miles of railroad, in which the government has sunk upward of $70,000,000 in capital investment and losses, was $1,231,998 in the fiscal year 1930, an increase of $281,287, or 30 per cent over the deficit of $950,711 in the fiscal year 1929.

While thoughtful, well informed Americans are opposed to government ownership of railroads it is only fair to say the Alaska road's unhappy condition is not due to mismanagement by the operating authorities. It should not be used as a horrible example in arguing against government ownership. The property is operated by competent railroad men, but their ability can not overcome or off-set the dead hand of the interior department at Washington, long noted for what the Greeks called cacoeconomy, meaning, bad, discouraging, irritating, mismanagement.

The Greeks have given us many words useful in referring to government in business, but the old English adjectives, circumlocutory inefficiency, serve admirably in discussing the Alaska Railroad. This does not refer to Secretary Wilbur. One does not learn railroading merely by joining the President's cabinet. Nothing disclosed in the secretary's biography indicates any experience fitting him for the serious duties imposed upon him in respect to this politically-inspired bit of construction. He should not be blamed. However, probably he knows as much about railroading as the war department knows about directing a freight line on the so-called waterways.

The Alaska Railroad has cost more than 70 million dollars, and that money came from millions of taxpayers in the United States. No private organization would have built the road, but the wealthy interests which demanded it could have put up the cash very easily. The facts will come out soon. To avoid a great loss many more millions will have to be spent. There is a tremendous potential freight tonnage in the Alaskan territory. It is an enormously rich country very much underestimated and little understood because of its remoteness, has coal, ore, fisheries, timber of the finest quality, and many other resources to support a railroad. At present, however, it is and long has been the Chicago & Alton of the Far North. The present line from Seward to Fairbanks does not justify the enormous expenditures the people of the United States have been forced to make. The continued drain on the treasury ought to give the house and senate material for much debate. However, neither ever seems to lack in this respect.

One-Fourth for Taxes

Nearly one-fourth of their net earnings were paid by the railroads in 1929 in taxes to the various federal, state and local governments, according to a survey of railway taxation by the Bureau of Railway Economics. The survey covers the period from 1890 to the present, and shows that nearly one-fourth of the property, activities, and traffic of the railways in 1929 were devoted to producing net earnings sufficient to pay the tax on railway property as a whole.

Not only was railway taxation in 1929 the greatest in amount ever recorded, but it came close to absorbing the greatest proportion of railway gross earnings. The ratio of 6.32 cents of taxes for each dollar of gross earnings in 1929 was only slightly below the corresponding average of 6.37 cents for 1928, and was greater than in any year except 1928 alone. Considered in relation to net earnings, railway taxes in 1929 absorbed 22.35 cents of every dollar of net earnings.

"Taxation in the United States," the bureau explains, "has become a major economic problem; every industry has felt its increasing burden and every industry is devoting attention to its own tax problem.

"That taxes are rising steadily and growing progressively more burdensome is unquestionable. It is a public and grave problem that demands the attention not only of railway managers, but of every corporation and every citizen as well.

"The total increase in railway taxes, during the nearly two-score years from 1890 to 1928, was from $31,000,000 to $412,000,000, an increase of 1,220 per cent."

This Noisy World

Americans are supposed to be the most progressive people on earth, particularly in engineering construction, and maybe they deserve the title. But no one could make us believe it after a summer of riveters on two sides of us, ten or twelve of them going at once. The plain truth of it is that Americans are the noisiest human beings on top of the globe, and unnecessarily noisy. They seem to delight in it. Many believe, apparently, that noise is the proof of industry, and of course to a certain extent this is true.

But it doesn't seem necessary to deafen the people

of Akron, Ohio, where the Goodyear-Zeppelin Corpn. is building one of the two giant dirigibles for the United States navy. A total of 6,500,000 rivets will have been used when the huge ship, to be named the "Akron," is completed, but unlike the riveting system used in the construction of our giant skyscrapers, the hammering of these rivets is done almost noiselessly. The rivets in the framework of the dirigible are "squeezed" into place by hand instead of being pounded by electric or air hammers. The "squeezing" device resembles nut crackers, with handles about 18 inches long. One rivet at a time is squeezed and one squeeze to a rivet is sufficient.

Since writing the foregoing paragraphs a large sign has been placed on the steel structure in course of erection at Fifth and Hill streets, Los Angeles. It reads:

> Our sincere apologies to our neighbors for the unavoidable annoyance this hammering must occasion.

There may be some good reason why rivets can not be pinched into place in the steel construction of a large building. But at the moment we can't think of one.

It Doesn't Seem Possible

Aren't men the strangest creatures? Don't you remember how, a few years ago, the country was astonished when it was discovered that the prize-winning paintings in a Chicago exhibit were the works of business men whom no one had suspected of any such artistic ability? Then came the story about Charles G. Dawes, vice president, and now ambassador to Great Britain, and his exceptionally fine work in music. Men carrying the heaviest burdens in business or government, it seems, must have some outlet for expression of the really finer elements of their characters.

And here comes the most startling story of all, in our estimation, about Clyde B. Aitchison, member of the Interstate Commerce Commission—startling because the ten or eleven men making up this overstrained governmental body are not supposed to have a moment to spare for anything outside the bastile in which they work their wonders. Someone told us not long ago that the I. C. C. members have to carry their lunch nowdays, or perhaps we should say luncheons.

"Clyde Aitchison," says the Washington writer, "is perhaps official Washington's most celebrated musician. His flute, his baton, and his ability as a composer have made him almost as well known in the capital as his position on the Interstate Commerce Commission.

"With his silver flute he has made for himself a reputation that compares favorably with real masters of this instrument.

"The conversion of the invocation of Eurydice in Peri's opera, 'Orpheus'—the first complete opera ever written—into a choral harmonized in the old style has delighted music lovers in four of the largest cities in the East. And his version of the Schwabian score, 'I Have an Old Sweetheart,' is just as popular. And there are others from his pen.

"But as an orchestra conductor, Commissioner Aitchison is known the best. Down at the Interstate Commerce Commission on Pennsylvania Avenue he has built up a male chorus of 40 voices recognized as one of the best organizations of its kind in Washington. It is called the Interstate Commerce Male Chorus and is composed of examiners and other employes of the commission."

We wonder—and we do it in the utmost humility—whether the commissioner ever has tried the new theme song written for the Recapture scene in the thrilling railroad tragedy, "The Great Divide." It is called "Out Where the Net is Low."

What? Sixty Cents?

A passenger on the Canadian National's Continental Limited reported the other day, finding a pearl worth $75 in one of the oysters served him. The story was all right until we read that the dinner cost only 60 cents. Is Sir Henry trying to ruin the game?

Discouraged?

Jonathan C. Gibson, chairman of the Recapture Board of the Interstate Commerce Commission has resigned. Despairing, perhaps, of ever recapturing anything, Mr. Gibson is going into private law practice. Now, let's repeal the law he tried to enforce.

Train Telephone Service Popular

It is reported that the two-way commercial telephone service established April 28, now used on the passenger trains of the Canadian National Railways between Montreal and Toronto, a run of about 335 miles, is proving successful. The number of calls handled varies considerably from day to day. On some occasions a train has handled as high as 31 calls on a single trip, while the total number of calls for the first five months of operation was 791.

During the first six months of operation about 60 per cent of the messages handled were "curiosity" calls, and 20 per cent business conversations. The latter now constitute about 65 per cent of the volume, social calls about 25 per cent, while the curiosity messages have been reduced to 10 per cent.

Most of us hope for a degree of seclusion while traveling. Certainly we welcome the days when we are safe from the telephone.

Advertising Did It

In a supplement to the edition of November 12, the United States Daily prints a page advertisement of the J. Walter Thompson Company, one of the nation's greatest and oldest advertising agencies. This page advertisement contains these lines:

> Our figures reveal that of all our clients' sales positions are reasonably dependent upon advertising:
> 75% are ahead of 1929 positions
> 87.5% are ahead of 1928 positions
> —all without extraordinary appropriations.

The point to emphasize here is first this: In times of economic depression we hear principally about the lagging industries, those whose earnings are lower than in better times. Rarely does anyone issue reports about the firms that are ahead.

Seventy-five per cent of J. Walter Thompson's clients report sales positions ahead of 1929 and 87.5 per cent ahead of 1928. Why?

You know. You don't have to ask Dad. You know they are all advertisers. It isn't a new thought, but it is always pertinent: We might never know the hen had laid an egg if she kept her mouth shut.

Railroads Are Buying Equipment

A Special Editorial of Good Cheer Based on Telegrams From Executives Planning Programs Costing Millions

THE MANY industries concerned in the manufacture of equipment, materials and supplies—the things with which railroads are made—and railroad men and their families, too, ought to find cheer for Christmas in this latest news from Washington.

To tell it briefly and clearly, as all good news should be told, it is necessary only to say that the Interstate Commerce Commission, by permitting common-sense and perfectly proper adjustments of the depreciation accounts of certain roads, makes it possible for them to put men back to work, to spend many millions of dollars for equipment which might not otherwise have been undertaken for several months.

Railroad men who have been idle and now have a chance to go back to the job may not understand depreciation accounts, but the supply men, the manufacturers know all about them. It is enough right now to say that depreciation seems to have a different front every time it appears in the commission. Every case seems to call for different consideration. All we need to know at the moment, with Christmas staring us in the face, is that numerous roads are announcing mighty interesting programs, involving the spending of millions. This, of course, means work. Work means money, and money means a Merry Christmas.

The first cheerful news came in a telegram from Charles E. Denney, president of the Erie Railroad, replying to an inquiry sent to several of the principal lines respecting plans for the winter. Mr. Denney says the commission's action in granting authority to adjust depreciation accounts enables the Erie to start "a quite heavy program of retirement of equipment." Several hundred men on furlough have been put back to work. Here is Mr. Denney's message:

> Our budget for 1931 has not been approved. Delivery not quite completed on more than nine million dollars' worth of new equipment ordered for 1930.
>
> Our equipment, track, and facilities have been fully maintained during the year, and now are in better condition than ever. We expect to continue full maintenance program during 1931.
>
> Recent action of the Interstate Commerce Commission in granting us authority to adjust our depreciation accounts makes it possible for us to start a quite heavy program of retirement of equipment. Several hundred furloughed men have just been recalled to do this work which is to be carried on through next year.

Looking to its future efficient operation the Erie applied to the commission recently for permission to increase its depreciation reserves through the charge of $21,966,000 to surplus. This, being granted, enables the Erie to take another step in its rehabilitation program begun in 1927. While 8805 units of equipment were retired in 1927, it was necessary for the road to retain some equipment of obsolete types until additional equipment was purchased.

In the past four years the Erie has purchased 194 locomotives, 178 passenger cars, 5875 freight cars and certain other miscellaneous equipment.

It now proposes to retire, over a six-year period, 193 locomotives, 18,070 freight cars, 280 passenger cars, 600 units of work equipment and ten units of floating equipment, or a total of 19,153 units, replacing this with new and modern equipment.

The $21,966,000 charged to profit and loss surplus provides for an adjustment of the road's depreciation rate to a straight 4 per cent applied to cost on all classes of equipment, with the exception of gasoline motor cars and motor equipment of such cars. On this equipment the rate of 5 and 12½ per cent, respectively, a year are used.

The Missouri-Kansas-Texas comes up with a real Christmas tree for business and the employes. The newly-elected president, M. H. Cahill, wires *Transportation* to this cheerful effect:

> Our budget for 1931 is still in preparation, but we contemplate improvements costing $6,500,000 which will provide a program comparable to that of 1930. The principal projects will be roadway improvement and rail and bridge programs, our requirements not calling for extensive equipment additions at present.
>
> In contributing to the relief of unemployment we obtained special authority recently from the Interstate Commerce Commission enabling us to resume operations in our locomotive and car shops. Under this special authority all equipment units not immediately needed to handle traffic are undergoing shopping, the charges being carried in suspense until such time as equipment is placed in service, rather than being charged to current operation. Employment is thus provided for forces in shops that otherwise might be shut down.

President Davis of the Delaware, Lackawanna & Western, wires:

> Remembering our promise to President Hoover to carry on during 1930 the same as if normal times prevailed, the Lackawanna completed its great terminal warehouse and local freight station in Jersey City; went ahead with, and shall almost complete the electrification of about 160 miles of track in northern New Jersey suburban zone, and held closely to its regular maintenance program. Consequently, we shall enter 1931 better than ordinarily equipped. If business improves in the spring we expect to want some locomotives, freight cars, shop tools, and 25,000 tons of rails.

The Rock Island Lines, President Gorman wires, has followed a program of stabilized employment in the present depression. While equipment requirements for 1931 have not been determined, Mr. Gorman says his company expects to continue keeping every possible man at work consistent with business requirements.

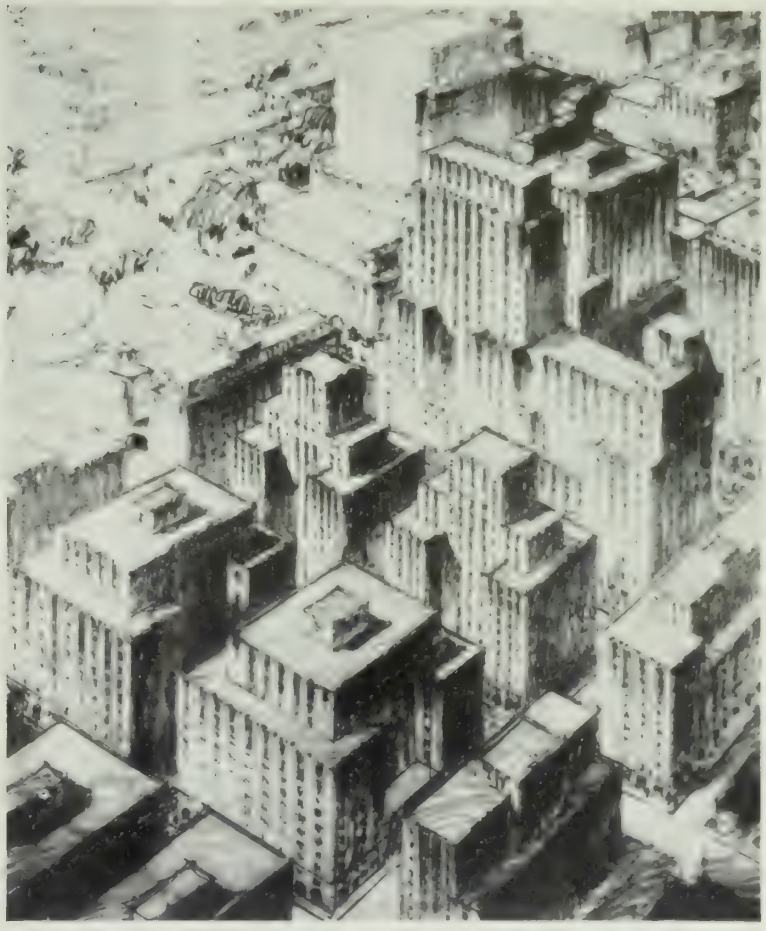
The New Haven System, President Pelley wires us, is now receiving 33 multiple unit cars and trailers, and hired 50 additional men December 1, to apply the electrical equipment. In 1930 the New Haven rebuilt 633 freight cars in its shops, and

(Continued on Page 45)

The Model Terminal for Montreal

Making a Dream Come True

By E. W. Gage



The Towering Central Structure Will be the New Terminal at Montreal When Completed.

MONTREAL, Canada's commercial, financial and transportation metropolis, is to have one of the world's finest transportation terminals, The culmination of many years' thought and planning, it will render to this busy center the benefits of coordinated effort in handling the heavy freight and passenger traffic which two transcontinental railways now receive and deliver to the ships of the seven seas, and insuring to the many agencies involved the utmost in economies of operation. At a cost of $50,000,000, the outgrown and haphazard system will be transformed into a centralized terminal which may well serve as a model.

The Canadian government appropriated the necessary money, one-fifth of which was expended during 1930 in the execution of one of the most far-reaching, comprehensive endeavors launched in recent years to place the transportation business of one of the world's principal ports upon an efficiently operated basis. Direction of the work is under the immediate control of engineers of the Canadian National Railways, the government-owned and controlled system, although an invitation has been given to the privately-operated Canadian Pacific Railway to participate.

In the development of a community, as in the expansion of an industry, an essential factor is the ability to anticipate future needs. A consideration of the future's requirements becomes the more desirable if commercial and civic development is to proceed along organized lines without necessitating expensive and laborious reconstruction at a future date. Failure thus to look into the future has been an expensive item in the management of more than one transportation venture. The men charged with modernizing Montreal's transportation facilities hope to escape such hazards.

Ever since Montreal was founded, back in 1534, like Topsy, it has "just growed" too often without leadership and with little thought of concentration of transportation terminals. One railway spotted a station here, another down the wharf. All this made Montreal a horror to shippers and travelers alike, and called for expensive and time-consuming trouble in transfer from one line to another.

"Planned with an eye to the future, with consideration not only of the needs of the Canadian National Railways, but also the needs of the growing metropolis of Canada, the new terminal will fill a long felt need," says S. J. Hungerford, vice president of operations and construction of the Canadian National, the executive in charge of the work. "The plans were not an overnight development. For years our engineers have sought to solve the problem of suitable terminals for Montreal; these now envisage not only the construction of a modern passenger terminal, but, perforce, also the removal, in so far as possible, of grade crossings within the city.

"Under the plans, all lines entering the new terminal will be electrified, removing the smoke nuisance from the city's business district. Some of the benefits which the plans of Chief Engineer O. B. Brown and his staff, will insure are: The creation of a large modern station; coordination of existing railway facilities; economies in operation; extension of freight accommodation, and the solving of a

serious problem by eliminating grade crossings in a densely populated area."

Nearly one-third of the $50,000,000 to be expended will be required for the elimination of dangerous level crossings, many of which have been an issue for a generation. The remainder will be used in constructing the terminal and building 17¼ miles of railway lines within the city necessary in connecting the existing lines in the process of coordination. Part of the new lines will enable the C. N. R. to take full advantage of lines and facilities in the east and west sections of the city and its environs. These are now so widely separated that transfers may be effected only by using the heavily loaded lines of the harbor railways, or by a haul over the company's own lines a distance of 108.4 miles. By the construction of a new link, located behind Mount Royal, the distance will be reduced to 20.4 miles, and great economies in cost and time be effected. In addition, a new industrial and residential area, not now served by any transportation system, will be made available.

The new terminal is being built in the heart of the business district, between Cathcart street, on the north, St. Antoine, on the south, Mansfield, on the west, and St. Genevieve, on the east, convenient to the hotel, shopping, business and theater district. The station facilities will be almost entirely below the street level, leaving a large proportion of the surface area, some 600,000 square feet, for rental ample to meet the interest on the investment involved in the passenger terminal.

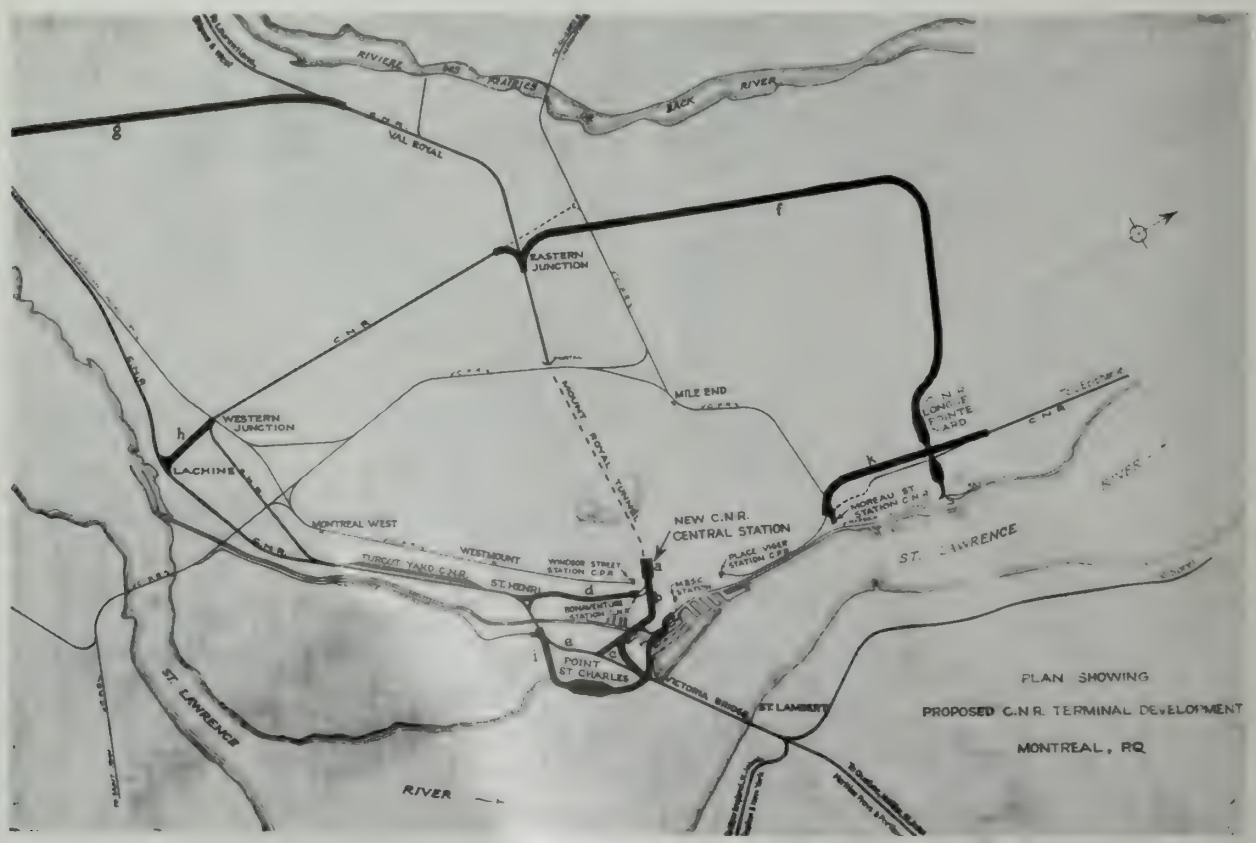
New streets will be thrust through, or over, the structure, and plans will permit the improving of existing streets surrounding the terminal area to handle increased traffic incident to the growing use of motor cars. Passengers will be able to enter the terminal from various streets in the immediate vicinity, and the entrances and exits for pedestrians and vehicles will be ample to accommodate heavy traffic, now and in the future.

A double-tube subway for vehicles will be constructed under McGill College avenue, extending south from Cathcart street to a point a short distance north of St. Catherine street, designed to prevent congestion of street traffic and delay to vehicles at these busy intersections.

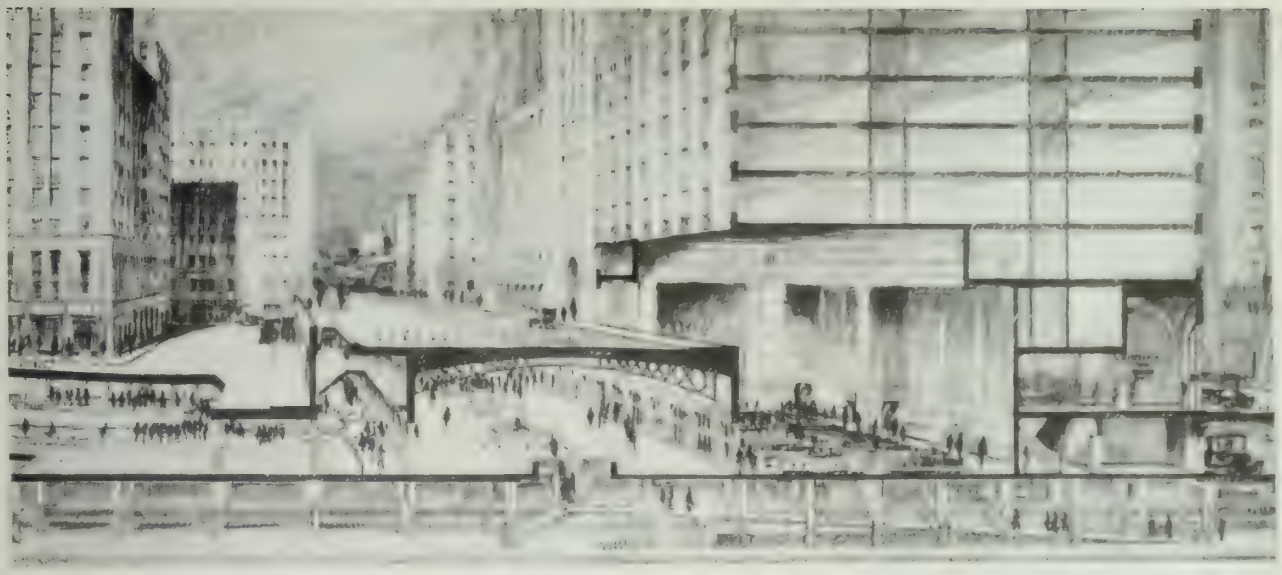
The trackage capacity to be provided at first will be about equal to that of the Pennsylvania terminal, in New York, exclusive of the special suburban facilities (at that terminal), and equal to that of the new Toronto terminal. Plans permit of enlargement, as necessary, up to a capacity equal to that of the Grand Central terminal, exclusive of suburban area.

Victoria bridge, which spans the St. Lawrence, will be connected with the new terminal by means of a viaduct, reducing by two miles the distance which passenger trains now travel, and eliminating numerous dangerous level crossings. For a part of the distance the viaduct structure will be of reinforced concrete, with steel spans over the streets; these spans will have concrete docks and the tracks throughout will be set in rock ballast to minimize noise and eliminate dust. The design of the structure is of a pleasing character, adding to the neighborhood through which it passes, with special attention to artistic features of all bridges which cross streets. These sections will have storage space beneath, either for use of the railway or rental purposes.

For the remainder of the distance the viaduct will be of steel construction and earth embankment, according to the topography spanned. This new short city line will remove from the present traffic route fully 80 per cent of the passenger traffic, and route it over the shorter route with no level



The Great Montreal Terminal Project As It Appears on the Map.



Sectional View Showing Relation of Platforms, Concourse and Streets. Above the Station Proper There Will be More Than 600,000 Square Feet for Rentals.

crossings. This will prove economical, since not nearly so heavy a mileage will be required to handle increased traffic. This saving, Mr. Hungerford explained, will go a long way toward paying the cost of the new direct viaduct, while the two miles shorter distance, considering the large number of trains operated, will represent a substantial saving in operation.

Coordination of all passenger traffic in one terminal permits use of the present Bonaventure passenger terminal as a freight terminal. Situated in the heart of the commercial district, this insures greater economy and efficiency to the wholesale and retail districts in the speedy delivery of goods and their prompt carriage to stores and warehouses.

A double track line will be projected from the new terminal to Val Royal, via Mount Royal, to bring trains from Coteau to the central point. This route provides an almost completely grade-separated line for a distance of nine miles from the new station, with but two level crossings to be eliminated. This new line will become an important passenger feeder.

A new single track line, ten miles in length, from Longue Pointe to Eastern Junction, near Mount Royal, provides an urgently-needed link between the various yards and tracks in the eastern part of the city and those serving the north, west and south sides. The shortest route now over the Canadian National lines between Longue Pointe, in the east, and Turcot, in the west, is via Joliette and Rinfret Junction, a distance of 108.4 miles, while via the new route, around Mount Royal, this distance will be reduced to only 20.4 miles. In a similar manner, direct connection with Montreal's waterfront, both for passenger and freight, and greater economy in joining rail with sail, is to be provided by new short routes joining new lines with the steamship docks.

An enginehouse and other terminal facilities will be established near Mount Royal, and the coach yard moved to a site beside the new Point St. Charles shops, thus insuring substantial operating economies. The towering office structure to be erected over the terminal will permit of concentrating the executive and clerical staffs of Canadian National in one building instead of in 14 widely separated office buildings.

At present the Canadian Pacific Railway has no entrance to the west end of the harbor. In the interest of export traffic and port development the plan provides for the two lines jointly constructing a large new freight yard on the bank of the St. Lawrence in Point St. Charles. Likewise, the Montreal harbor commissioners are to construct a double track line from their existing tracks to the new freight yard to handle harbor traffic.

Some conception of the gigantic proportions of the terminal project may be gained from the fact that engineers are confronted with the task of excavating and moving some 3,000,000 cubic yards of earth and rock. The excavation work to be performed in providing station trackage at the present tunnel terminal site alone involves removal of some 1,100,000 cubic yards of earth and rock, to extend existing lines and provide efficient means of ingress to the new terminal. Taken all in all, the Montreal terminal project is by far the most comprehensive and gigantic at present under execution, and may well become the model for other growing traffic centers.

Increase Port Facilities

Members of the Vancouver harbor commission are engaged in carrying out a $10,000,000 improvement program to improve transportation facilities to meet increasing demands. The extensive projects under way include an ocean pier, water front cold storage plant, fish storage and fish wharf, and extensive additions to three terminal grain elevators, adding 5,000,000 bushels to the port's storage facilities. These additions will give Vancouver a storage capacity of 19,885,000 bushels, and one of the most modern rail-to-ship handling systems in existence.

The New Jerusalem

The city of New York has 5,600,000 people, of whom nearly 2,000,000 are foreign born. It has more Italians than Rome, more Irish than Dublin, more Germans than Bremen, and one-tenth of all the Jews in the world. Last but not least, it has more telephones than London, Paris, Berlin, Petrograd and Rome combined.

"Here's a man writes to our motor department for a good brush for his car."

"Tell him to stall it on any railroad crossing."

Piraeus Terminal, Interurban Electric Railway Running to Athens, Greece.

Queer Sights on European Railroads

By A. L. H. Street

My first glimpse of the Simplon-Orient Express, as it was about to pull out from Istanbul (Constantinople) on its journey through the heart of Europe to Paris, began with an admiration for the luxurious equipment, and ended with a snicker over the antiquated oil-burning lamps that seemed so much out of place on an otherwise modern locomotive. There were five of them, one on each side of the pilot, one at the top of the front end of the boiler, and one at each rear corner of the tender.

These oil-burning lamps are to be seen on many European railroads. If there are electric headlights in use, I did not chance to see one.

One Saturday night, after paying a hasty visit to Shakespeare's birthplace and Ann Hathaway's cottage in Stratford-on-Avon, I stood on the station platform waiting for a train toward London. While I wondered what sort of immortal poem the bard of Avon would have written had he got as little dinner for his money as I had just eaten in his home town, the whistle of a locomotive proclaimed the approach of a train. Having a special fondness for seeing a train approach a station at night with a flood of white light ahead of it, I watched for it. But the bright glare never showed up. Presently, I saw something coming around a curve, looking like a dim motorcycle light. It proved to be the train I'd heard approaching, a goods (freight) train. As it rushed through the station it was almost amusing to see several of those little four-wheeled freight cars they use over there loaded with small quantities of pine flooring or similar lumber. The boards were too long to lie flat, so they projected at an angle into the air over the rear end of the cars, flapping together as the train dashed along on its unlighted way.

From the heart of Budapest, Hungary, to the city's principal park and recreation center extends an interesting subway. Single cars about as long as our largest city street cars operate over the line, and under two or three of the city's most prominent thoroughfares. Entrance and exit are through the side doors. The interior resembles the cabin of a launch, with end seats forming almost half circles. Magazines are provided for the passengers who pay a fare of four or five cents.

If the people of Athens and Istanbul (Constantinople) had advantages in other respects on a par with their local transportation facilities, they would be exceedingly up-to-date. For neatness, modern equipment and frequent trains, no interurban electric railway excels the line that operates between Piraeus and Athens. There are first and second class cars, with an exterior finish the color of walnut. For some distance under Athens the tracks are carried in a subway ending in the heart of that city.

Plying up and down and across the Bosphorus from Istanbul is a fleet of ferry boats as modern and fleet as those that operate on San Francisco Bay, although more closely resembling in type the Wilson Line boats running in the Delaware below Philadelphia.

Buses operated in Athens, Istanbul, and other cities of the Near East compare very favorably with American buses. The antiquated appearance of street cars shows that street railways are not holding their own with motor vehicles.

The ticket punch used by railway ticket collectors in this country is a very ladylike looking device when compared with the clumsy, heavy punches used on most European railways. The latter are devoid of nickel or other similar finish, are eight or nine inches long, and look as if it were as easy to carry them about as a car sealer or monkey-wrench. The length and weight of these punches are increased by the fact that the same device contains a whistle and a means of locking and unlocking the doors of cars. There may be other uses to which these combination tools are adapted. To say the least they do not compare in appearance with our trim little nickel-plated punches.

Looking from a car window on a train from Malmo to Stockholm, Sweden, as we stopped a few minutes at the station in Lund, I noted a building on the railroad premises with this sign on it: "Godsmagasin." I had heard that preachers paid cut rates for railway transportation, but the idea of a railroad company providing ground for use in publishing a religious periodical seemed to require further looking into. Investiga-

The Simplon-Orient Express, Continental Europe's Crack Train, Ready to Leave Istanbul (Constantinople.) Note the Oil-Burning Headlights.

A Greek Railway Car, Typical of European Freight Cars.

tion, as well as a second look at the building, disclosed that the sign meant "Goods magazine," or freight warehouse.

To the American used to the railroad conductor's uplifted hand as a signal to the engineer to start a train, it is a matter of interest to note the various substitutes utilized on European railroads. Common among these substitutes for the conductor's waving hand are whistles, green flags, and a stick with a disc at the upper end resembling a target. When one of these devices is suddenly raised above the heads of passengers on the platform, exhibiting a black bulls-eye, it is easy to understand how a wild and woolly two-gun Westerner traveling in Holland, or one of the other countries in which this kind of signal is used, might regard it as a challenge to his accuracy as a pistol shot. Apparently, all departure signals in Europe are most commonly given by either the stationmaster or one of his subordinates.

When my train from Hamburg, Germany, to Amsterdam, Holland, stopped at the frontier station in The Netherlands for customs inspection, I had a chance to walk up and down the platform and get my first view of a Dutch locomotive. Like most, if not all, other European engines, they do not wear bells. The reason is not apparent, unless so much brass is used on the boiler bands and sand and steam domes that there is not enough left to make a bell.

A light engine moved through the station, and to warn passengers on the platform against approaching too near the edge, a uniformed attendant walked abreast the pilot of the locomotive, ringing a hand-bell! He maintained his position just opposite the pilot, regardless of the increasing speed of the engine. Before he reached the farther end of the platform, his walk had become almost a run, which was not rendered any more graceful by the circumstance that he was bow-legged.

The traveler who has "seen America first" and then journeyed abroad will appreciate on his return as he has not before the liberal privileges of free checking of baggage on our trains. My first railroad journey on a trip through nineteen countries of Europe was from Constanza to Bucharest, Rumania. Assuming that the government-owned railways of that country would be no less liberal than our privately-owned railroads, I had my two heavy suitcases carried into the baggage room in Constanza and checked to Bucharest. But it cost the equivalent of $1.11 to enjoy the luxury that no other passenger on the train enjoyed, of having my suitcases carried in the luggage van for about 90 miles. That is almost the amount of third class passenger fare between those points. Second class passenger fare is about $3.68. But that was not all—I had to pay a porter about 25 cents to carry the two suitcases from the baggage room to the baggage car.

I do not know what the practice is on other railroads in Europe, for thereafter the suitcases rode with me, except that I was compelled to check them, the first and only time, in leaving Brussels on the boat train for Ostende to embark for England. There was a moderate charge for that service.

For the first two days I traveled on the railroads of Sweden and Norway it looked as if there was at least one admiral in every town and that he made it his business to meet all trains and show himself off in his gaudy uniform than which nothing could be more flashy. But finally a bit of observation yielded the discovery that he gave orders to subordinates on the station platform, and that he was the stationmaster! I'd like to see the tailor who could deck out any generalissimo or admiralissimo with more ornate epaulets, than some of those Swedish and Norwegian stationmasters wear.

One of the common practices on European railroads is the use of broad leather straps for the raising and lowering of passenger coach windows. Except for the fact that holes are punched along the center line at intervals of four or five inches to permit lowering the window at different heights, the traveler making his first trip on a European train might suspect that each compartment was equipped with a razor strop.

The passenger boarding a Swedish train does not grasp a brass or iron handrail, but a long plaited thong of brown leather. Alighting from a car, one is enabled to grasp this device until he has safely secured his footing on the platform.

The cargo steamer on which I voyaged from Bristol, England, to Philadelphia, ostensibly as purser but in reality as sole passenger, had docked. Awaiting the coming aboard of Uncle Sam's customs and immigration officers, the ship's chief officer and I stood on the navigating bridge. Directly ahead was a freight yard, and a coupling of cars was just about to be made in a switching operation. Then patriotic pride prodded me to say to him:

"All the way across you've been 'razzing' American institutions, and I've waited to see if there was not one of our things that you could

Street Cars in Athens, Greece.

commend. Now's your chance. Watch that coupling."

And as it was instantly and automatically made, I added, "If that were in England, how long would it be before the 'guy' between the cars would have the two three-link chains hooked on the opposite drawheads, and have the slack taken up by revolving a turn-buckle bar twenty or thirty times?"

The chief officer's only excuse for Britain's backward coupling methods was that America is a new country. And I wish that I had let it go at that, but I wanted to "unload plenty" upon him. So I told him about the dim, dinky little headlight I saw on the train at Stratford-on-Avon. With the amazement that only an Englishman can express with calm dignity, he wondered why I should expect to find any light at all on the front end of a locomotive in England.

"Why, suppose there should be something or someone on the track?" I queried.

"But there couldn't be anything on the track," he persisted.

He seems to have given a very conclusive answer. They don't use railroad rights of way in Britain as picnic grounds, nor the tracks as sidewalks; and train wreckers are unknown. So what good would it do the engine-driver if he could see what was ahead of him? He knows that "there couldn't be anything on the track;" his eyes could tell him no more.

Gas Heaters for Switch Points

Installation of gas heaters under switch points in the Madison street passenger station interlocking plant of the Chicago & North Western Railway has been completed and work is going forward on installation in the Sangamon, Carpenter and Division plants to prevent switch freezing and delayed operation during the winter months. Under this new plan, the keeping of ice and snow from becoming impacted in the switches of the terminal yard, a small gas burner is placed under the bottom of the rail at the switch point and, when lighted, prevents the formation of ice, which, for years, has been the enemy of big terminal operation in severe weather, J. A. Peabody, signal engineer of the road, stated in explaining the installation.

A gas pipe is laid parallel with the rails and immediately adjacent to them, being fastened to the ties, and from this pipe a series of smaller pipes run, feeding the small gas plates or "cups" under the rails at a distance of two or three feet apart. There are 23 slip switches with movable point frogs and 46 single switches in operation in the main terminal yards of the North Western. The installation costs about $50,000 for the four plants.

It Was Mr. Galloway

W. W. Wood, superintendent of safety and welfare on the Baltimore & Ohio Railroad, did not speak in the recent meeting of the National Safety Council at Pittsburgh. The excellent speech printed in the November issue was delivered by C. W. Galloway, vice president in charge of operation and maintenance. The copy was sent us by Mr. Wood. Not knowing him personally the copy reader supposed he was the orator.

Plans for the Exposition

Railroads will have opportunity to meet the public under circumstances unique in the West when the Pacific Coast Transportation Exposition opens at the Shrine Civic Auditorium, Los Angeles, March 15 to 28, for a two-weeks' display of the latest advances in modern transportation. In recognition of the part played by the railroads in developing Southern California at a rate which the census proves to be without precedent, important main floor spaces have been set aside by John De Moulin, manager director of the exposition for railroads in making their own specialized appeal.

First of its kind in the West, the exposition, it is said, will be the largest and most comprehensive transportation assembly ever held in the United States. Historic background recording phases of the pioneering of the West through the agency of railroads will be shown in a striking series of decorative paintings now under preparation, Mr. De Moulin says. In addition to steam and electric railroads and their branch activities, aviation, water transport, tractors and caterpillars and road making machinery, motor trucks, stages and buses will be exhibited.

Canadian and Mexican officials will join with representatives of Washington, Oregon, California and Arizona in special days, connoting the international import of the exposition. The secretary of commerce at Washington will be invited to open the exposition formally. Headquarters have been established in the Chamber of Commerce Building, Los Angeles.

Spending Money in Canada

Canadian National Railways will spend $500,000 in a 50-mile track relaying program to be started immediately on the Edmonton and Calgary divisions, according to an announcement by the general superintendent of the Canadian National Railways, Alberta district. The work will be carried out as rapidly as possible. New 100-pound rails will be laid on the main line east of Calgary, while a branch line in the Drumheller district will be improved with 85-pound rails.

A street car loop will be constructed on Bay street, Toronto, Ont., at a cost of $100,000. The Toronto Transportation Commission has secured permission from the board of control, Toronto, for this work.

Canadian National Railways will award contracts in December in connection with construction of several subways in London, Ont. Plans were prepared by the architectural staff in Montreal.

Reduction in Rail Fire Losses

No industry can be more justly proud of its fire reduction losses than the American railroads, according to figures recently compiled. Although the fire losses on roads in 1929 totaled the tremendous sum of $4,376,000, this represented, by way of comparison, a reduction of 58.6 per cent compared with figures of the previous decade. The bill for damaged merchandise in transit totaled $526,000, or slightly more than one-tenth of one per cent. The average fire loss for every mile of road in 1929 was $20.25, compared with $54.40 in 1920, or 68.8 per cent less. Average daily losses fell more than 50 per cent. The figures cover 67 roads with a mileage of 216,092, or 80 per cent of the mileage in the country.

The World's Largest

In area Los Angeles is the world's largest city, covering 282,424 acres. Berlin, Germany, is next with 216,891 acres. Chicago has 134,726 acres, London only 74,850 and Paris only a fraction of that or 19,279 acres.

Buying Equipment

(Continued from Page 38)

will continue at the same or a higher rate of work in 1931. An order was placed in August for ten electric passenger locomotives costing $1,800,000.

The Milwaukee advises by air mail that it is inquiring for 40 freight and 17 passenger locomotives for delivery early in 1931, to cost about $5,000,000. The New York Central entered the market for 50 Hudson type locomotives to cost about $5,000,000, and the Northern Pacific announces a rebuilding program involving about $4,500,000. This N. P. program will give work to 600 additional men between St. Paul and the Pacific Coast, with a payroll increase of a million dollars for at least a year. This rebuilding work will include the building of 1,000 refrigerator cars, 1,000 box cars, conversion of 500 coal into box cars, and 500 box into stock. Incidentally, also, it means business for big industries, 20,000 tons of fabricated steel, 18 million feet of lumber, and immense quantities of iron and steel castings, 3,000 tons of steel forgings, and six million square feet of insulating materials.

The Great Northern does not expect to make any further general reductions in its force, which means assured work for 25,000 employes on the system. The Atlantic Coast Line discontinues its curtailment program, assuring work for 1,000 men.

The Canadian National Railways are inquiring for 3,000 steel frame box cars, 500 gondolas, and 500 service cars. The company also inquires for material for 500 refrigerator cars. Track laying will be continued on four branch lines of the Canadian National Railways during the winter, with approximately 143 miles of track to be laid. A program of construction of stations and maintenance of way buildings along these lines is also planned.

The Canadian Pacific Railway is inquiring for 50 passenger cars, and the St. Louis-Southwestern Ry. inquires about ten locomotives.

The New York Central has asked for bids by Dec. 18 on 170,000 tons of steel rail with necessary splice bars, and the Atlantic Coast Line has ordered 12,000 tons of steel rail from the Tennessee Coal, Iron & Railroad Co. The rail is to be delivered in monthly lots throughout 1931.

The Virginia Railway wires it is building 42 miles of road from Elmore to Gilbert, W. Va., and is to complete in the first quarter of 1931, a concrete and steel bridge connecting the railway with New York Central Lines at Deepwater, W. Va. The Virginian also has awarded a contract, says a telegram from C. H. Hix, the president, for 500 hopper cars to be delivered in the first quarter of 1931. The program described has provided work for many men. The road's regular yearly maintenance allowance will not be curtailed in 1931.

Approximately $3,000,000 worth of new equipment in the passenger service of the Long Island Railroad is being placed in service with the receipt of the final installment of thirteen new steel motor cars this month.

Further expenditures of $1,500,000 for nine new power substations and extensions of transmission lines are also involved in the improvements. A total of 85 cars is being added to the Long Island's electric service, providing seats for 6,360 additional passengers.

The Pennsylvania Railroad management feels that its first obligation for relief due to unemployment is toward its own furloughed men. Accordingly steps have been taken to see to it that wherever need arises for assistance to tide men over the current period, such assistance will be rendered through existing organizations of employes and their families whose year-in and year-out function is to give help in temporary emergencies.

The Pennsylvania Railroad is progressing on a large program of improvements to provide as much work as possible in addition to the requirements of current business. In cooperation with representatives of certain classes of the employes, the company has retained in service a substantial number of men who might otherwise have been furloughed if business considerations alone were followed.

Fred W. Sargent, president of the Chicago & North Western Ry., says he believes 1931 will show, as a whole, a marked improvement over 1930, although he does not expect any great change until the latter part of the year.

"In the West," Mr. Sargent writes, "we need better commodity prices for our farmers, and along with this reasonable assurance of a normal crop next season. As industry begins to pick up and employment restored, we will, in my opinion, see improvement in commodity prices for farm products. There is only one thing that stands in the way, and that is the abnormal surplus that is being carried over to threaten future markets by the Federal Farm Board. The board, however, is exercising every possible effort to avoid this condition, and I have faith to believe that under its present management it will see the wisdom of getting rid of this surplus, even at a loss if necessary, rather than to hold it as a threat over next year's crop. The entire agricultural region, if once made prosperous, would afford markets of great quantity for manufactured products. Our farmers have not been buying and improving their properties because of the long period of depression through which they have passed, now culminating in commodity prices which are about the lowest since 1902."

Taxes $13.32 a Second

It must have warmed the hearts of the Rotarians of Mattoon, Ill., one night, last month, when C. D. Morris of Chicago told them the taxes paid by railroads in this country amounted to $13.32 every second throughout the year. This is getting the picture before business men so clearly etched that even the noisy Rotarians ought to understand it.

But *did* they? Taxes at $13.32 a second means $799 a minute, $47,945 an hour and $1,150,000 every day. In a year it adds up to 420 million dollars! Some tax bill.

Where did the roads get the money? Obviously it came from rates charged for hauling freight and passengers. Rotarians supplied some of this business. And some of these are Rotarians, despite the fact believe rates are too high chiefly because they have not known the reason. Few of them, perhaps, know that this 420 million dollars had to be taken from the net operating revenues of the railroads before a dollar could be paid to stockholders or a single dollar be laid aside for extensions and betterments. Railroad taxes have increased 302 per cent since 1911.

Railways and Waterways

(Continued from Page 10)

equalized movement of freight both ways.

Proper interchange of freight with railroads.

An equitable division of revenue accruing to both water and rail carriers for a combined haul.

It may be unnecessary to add, that for the railroads, this program calls for study and foresight, and for definite planning that will protect their interests, investments, and earning powers. They, the railroads, are vitally affected in this program.

Southern Roads Object to Joint Rates

A statement was filed with the Interstate Commerce Commission, November 17, by southwestern railroads opposing the application of the Inland Waterways Corpn. for a certificate of public convenience and necessity to operate a barge service on the Illinois River, and for orders directing the railroads to join with the federal barge line in through routes and joint rates.

"It is the firm conviction of the southwestern rail carriers," said the statement, "that the request of petitioner should be in all things refused.

"If granted, it will (a) provide duplicate wasteful facilities not necessary to properly or adequately handle the nation's transportation business, (b) create added routes and rates not needed or desirable in the public interest and not demanded by the shipping public, (c) divert sorely needed traffic from rail carriers merely for the continued operation of government subsidized barge properties to the detriment in rail transportation, (d) cripple and ultimately destroy the efficient and adequate rail service now afforded by the rail lines in southwestern territory, (e) result in no economies in the transportation of the nation's traffic, and (f) result in a further useless waste of the already heavily burdened taxpayer's money.

"These matters are, indeed, important to the southwestern carriers," said the statement, "and should receive at the hands of the commission the greatest care and consideration before further engrafting upon the national transportation system a government subsidized nontaxpaying inefficient method of water transportation.

"The barge line," it was emphasized, "has now reached the period of its existence when experimentation must cease and the commission should no longer blindly and without justifiable facts before it further engraft it into our transportation system.

"We further believe that the time has come when the benefits of this form of transportation must either justify itself of its own merit or fall because of its own weakness and for a lack of continued nourishment from the public treasury.

"The commission, we believe, is not longer justified in summarily ordering in rates and routes wholesale, as is here proposed, without a concise and definite showing by the barge line that economies, public interest and necessity require it."

The statement was made on behalf of all rail lines operating within the Southwest, with the exception of the Southern Pacific; the Rock Island; the Yazoo & Mississippi Valley, and the Louisiana & Arkansas railway companies. It was filed at the invitation of the commission, which asked the railroads for their comments on the federal barge service's application for permission to operate its barges on the Illinois River, and for orders directing the roads to participate in through routes and joint rates in conjunction with the government barges. The Southern Railway has already protested.

The southwestern carriers declared they concurred with the Southern Railway that if a certificate is granted to the barge line, the differentials under the all rail rates should be lower than those sought by the barge line.

The barge line is seeking more liberality in these circuity limitations. In this connection the carriers declared: "But we desire to go further and state that there should be circuity limitations on said required joint through routes not as liberal, or certainly not more liberal than those prescribed by this commission in its formulae in ex-parte 96, 153 I. C. C., 129, and the Fourth Supplemental Report therein, 167, I. C. C., 385.

"In our opinion," it was said, "the circuity involved in the required routes under those formulae is far too great, and our statement herein that the circuity in connection with any required routes with this applicant should not exceed the circuity in those formulae should not be taken as an implied approval of the too-liberal limitations on circuity announced in those formulae.

"This too great disregard of circuity, allowed on an assumed economy in rail-water transportation as against all-rail transportation which has not been provided and can not be proved to exist, results in the establishing of unduly low and wholly unwarranted rates which are a forceful inducement to the public to use a wasteful means of transportation which endures only because it is subsidized by the federal government."

The southwestern carriers, referring to the emphasis they put on the contention that the barge line could not exist if it was not subsidized by the government, pointed out the instance of an application of the Mississippi Barge Line, a privately-owned concern, in which it requested and obtained a flat differential of 35 cents in connection with its routes via Cincinnati and New Orleans, whereas the full measure of the two per cent differential enjoyed by the federal barge line would produce a flat differential under the all-rail rate of 42 cents.

"Not only does the privately owned Mississippi Barge Line forego the full measure of the differential which it could obtain and ask for and obtain rates 7 cents higher, but in its letter dated Oct. 15, 1930, seeking a revision of the Ex Parte 99 order, it rather frankly admits that it cannot survive even on rates 7 cents higher than those maintained by the federal barge line, and observe the restrictions on circuity of routing imposed by the commission in its Ex Parte 96 formulae."

"It, therefore, seeks to have the limitations in circuity liberalized, and seeks greater freedom in reaching the territory of origin and destination. Later this same privately-owned water carrier, the Mississippi Barge Line, of somewhat riper experience, in its application dated Oct. 15, 1930, for a certificate of public convenience and necessity to operate via the port of Vicksburg, and for orders directing participation of common carriers in through routes and joint rates, seeks a flat differential of 30 cents—where it could have obtained 34 cents—and still it insists, even in connection with its lower differentials and higher rates, that the circuity limitations must be liberalized.

"What more practical proof could be had that the federal barge line, were the government subsidy withdrawn, could not endure, than the instance of one of the first privately-owned and non-subsidized water carriers first refusing to ask for the full measure of the differential, and in its second application asking a still lower differential and higher rate?

"Let it be remembered that the offered justification of the government subsidy is to exploit the possibilities of water transportation, as an experiment to encourage private capital to invest in and take over the enterprise. Is not this first venture of a privately-

4000 LOCOMOTIVE BOOSTERS

In All Branches of
RAILROAD SERVICE

COAL on the ATLANTIC

FRUIT on the PACIFIC

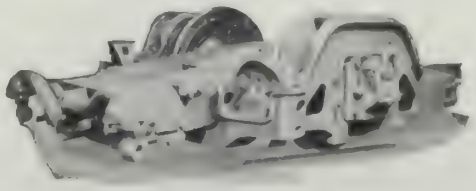
The Booster Reduces The Cost of Transporting Both

TO THE Booster-equipped locomotive is entrusted the job of speeding up the movement of freight of every description.

From perishables, hauled across country without damage and on scheduled time for proper icing, to the moving of heavy commodities such as coal, the Booster supplies extra power that makes higher speed transportation possible.

Wherever the Booster-equipped locomotive is used, on fast runs or for heavy drags, it starts trains smoothly, accelerates to road speeds rapidly and aids in retaining speed on grades. Such extra power, cut in only when needed is a source of economy and has had an important influence upon locomotive design.

Now, locomotives are built to haul loads over the rails at speed. The Booster is relied upon for starting, accelerating and in emergencies. Ton-miles-per-hour are increased and fuel consumption reduced with a resulting improvement in revenue.



FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

owned and nonsubsidized water carrier rather cogent and convincing practical business proof that no subsidized experiment can mislead private business judgment?

"These recent practical developments are an interesting chapter in inland waterway development which should be convincing to this commission that if the government experiment is to realize its objective of inducing private capital into the enterprise, it must be conducted on a higher level of rates."

In conclusion, it was emphasized that "subsidized competition is unfair competition and can not be met so long as the public treasury is not exhausted. The barge lines, paying no taxes and subsidized by the government, will not completely destroy all rail transportation because the barge lines can not exist and operate without some rail connections, but, unless restrained by the withdrawal of the subsidy, the placing of taxation thereon, the curtailment of circuity, and the requirement of rates at compensatory levels, will destroy the efficiency of rail transportation and thereby damage the public welfare in great measure."

The Southern Railway filed a protest with the commission Nov. 20, against the application of the Mississippi Valley Barge Line Company for the establishing of joint rates and through routes with common carriers by railroad through the port of Vicksburg, Miss. With respect to the increasing movement of barge traffic on the Mississippi and Ohio rivers and their tributaries, the Southern Railway referred the commission to an estimate of the committee on interstate and foreign commerce of the house of representatives to the effect that 30 million tons of traffic is now available for movement by water on these rivers, if facilities were available.

"The movement of this 30 million tons of traffic by water," declared the Southern, "would mean a loss in gross revenues to the rail carriers of not less than 150 million dollars a year, and a large part of this loss would fall upon the carriers operating east of the Mississippi and south of the Ohio rivers."

"The railroads of the United States today have cost not less than 26 billion dollars. Approximately one-half of that amount has been spent for building tracks and structures on which trains are operated. Out of every dollar earned by the railroads, not less than 12 cents is spent for maintaining such tracks and structures. Moreover they must pay on the value of such tracks and structures enormous state, county, municipal and local school district taxes, and, indirectly, federal taxes.

"The rivers upon which the applicant operates have been deepened and improved and are dredged and kept open for navigation by the federal government, from taxes paid by the rail carriers and others, with no expense to the barge lines operating thereon.

"Applicant has no tracks to maintain and has no taxes to pay on facilities comparable to those imposed upon the rail carriers on their tracks and the lands on which they are situated. Moreover, the rail carriers publish rates on all moving commodities, and must transport all traffic offered.

"Barge lines as a practical matter, choose traffic most desirable to them and leave undesirable and unprofitable traffic to move by the rail lines. As to their port-to-port rates, the large barge lines are unregulated and unrestrained. With these advantages and then a preferential rate adjustment over the rail carriers, the railroads are subjected to most unfair competition from the water carriers."

Waterways Need More Money

The recommendation of the Inland Waterways Corpn. for the expenditure of $3,750,000 for new equipment has been approved by Secretary of War Hurley. Of this amount, $650,000 will be spent for three new tow boats; $450,000 for a Diesel twin-screw type tow boat; $2,500,000 for 50 new standard type barges and $150,000 for a track barge to replace the two small track barges at Cairo, Ill. Plans and specifications for the new equipment are now practically completed and advertisements for bids will be issued as soon as possible.

Why Taxes Are High

An emergency appropriation of 250 million dollars by the federal government for road construction was recommended Nov. 21 to the President's emergency committee for employment by the American Association of State Highway Officials. The association also urged that advances to the states be permitted without immediate matching of the funds with state moneys as has been required in the past, the funds to be matched by future state revenues.

There Really Is Such An Animal

When the Hoosac Tunnel enlargement was completed the publicity department of the Boston & Maine implored the purchasing department (in vain) to buy a giraffe which could be sent through the increased bore and prove graphically to the public that anything at all could now be shipped via the under-Berkshire route. But all things come to those who wait, and recently a pair of giraffes appeared for shipment from the animal farm of John P. Benson at Hudson, N. H., to the Detroit Zoological Park via the Hoosac Tunnel. And they went through with about a foot to spare,—though giraffes are well known for their habit of holding their heads high before the world.

Old man Zarafah stood 14 feet, and the missus 13½, but when the great boxes in which they rode were done, there was clearance both for their foreheads inside the compartments, and for the compartments themselves.

Old Fashioned Coupling?

G. L. Butler of Macon, Ga., sued the Central of Georgia not long ago for $20,000 for alleged personal injuries sustained when he was struck by a coupling pin when he drove his car under a bridge of the railway company in Macon, Ga. The case went to the Georgia court of appeals where the verdict of the lower court for the defendant was affirmed. The court ruled that "a defendant's negligence cannot be shown by evidence of similar acts or omissions on other and different occasions."

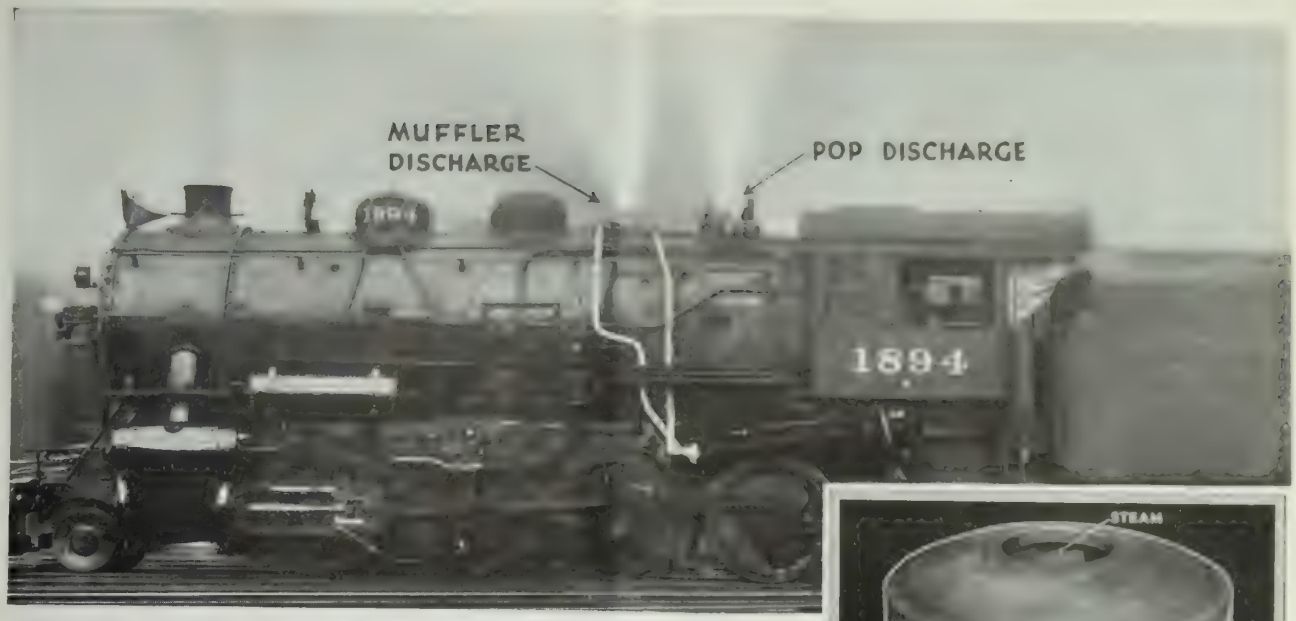
Bigger, Better Locomotives

Locomotives are becoming bigger and better, according to railway locomotive census report for 1930, issued by the Southern Pacific Co.

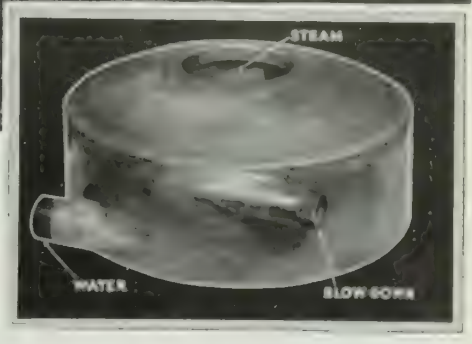
While in 1910 the company owned 1294 locomotives, today 1771 are required to move a vastly increased volume of traffic. The largest Southern Pacific rail giant of 1910 had a tractive power of 85,040 pounds.

Today its efforts are dwarfed by comparison with the 112,760-pound tractive power of the present largest type locomotives.

All hauling at one time, the 1771 locomotives of 1930 possess a combined tractive power of 78,284,750 pounds, as compared with 37,526,000 pounds in 1910.



B-A Blow-off Muffler in Operation



B-A Blow-off Muffler

NOW . . .

YOU CAN BLOW YOUR ENGINES *regardless* OF WIND OR WAYSIDE CONDITIONS

The B-A Blow-off Muffler effectively separates water from the steam by centrifugal action.

Located on top of the boiler—steam goes straight up in the air like the discharge of the pops—water is discharged to the ground.

No digging up of ballast—no dirt thrown into bearings—no danger to switch and yard men.

Boilers can be blown off when they ought to be blown, regardless of wind direction or wayside conditions.

B-A Safety Connection

Renders impossible an unsafe connection to roundhouse lines but permits a connection without disturbing the muffler. Only necessary to unscrew wing nuts and open the hinged cap.

B-A Safety Connection and B-A Blow-off Cock

The manufacture, supply and service of boiler water treatment chemicals is the primary business of The Bird-Archer Company.

These activities and expert services properly include the installation and service of mechanical devices, likewise designed to promote locomotive boiler efficiency.

THE BIRD-ARCHER COMPANY

NEW YORK • CHICAGO • ST. LOUIS

The Bird-Archer Company, Limited, Montreal

—P & A Photo

Downtown Section of San Francisco From 5,000 Feet Up; Part of the Eighteen Miles of Docks Along the Water Front. The White Marks at the Top of the Picture Are Ships of the Pacific Fleet Riding at Anchor.

The News of the Month

What's Been Going on in Transportation, Railroads, Automotive, Supply, Aviation

CAPITAL expenditures of Class I railroads for new equipment and additions and betterments to railway property were the largest in the first nine months of 1930 for any corresponding period since 1923, according to an announcement November 20 by R. H. Aishton, chairman of the executive committee of the Association of Railway Executives. The announcement was made by Mr. Aishton in connection with the annual fall meeting of the member roads at the Biltmore Hotel in New York.

Capital expenditures actually made in the first nine months of 1930 totaled $698,821,000, an increase of $125,001,000 or approximately 22 per cent above the same period in 1929, and an increase of $198,654,000 or 39.7 per cent above the corresponding period in 1928.

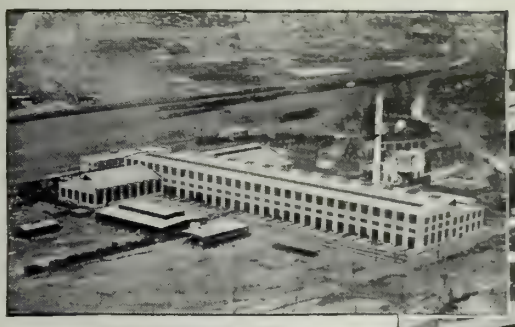
The amount expended for capital account in the first three-quarters of 1930 exceeded by $69,728,000 or 11.1 per cent the amount of capital expenditures made in the first nine months of 1926, which, prior to this year had been the greatest for any corresponding period since 1923.

The railroads have made these expenditures to be ready to meet future transportation demands adequately and without delay, and to enable them to continue to make economies and efficiencies in operation that otherwise would not be possible.

Of the $698,821,000 actually expended for capital account in the nine months period this year, Class I railroads expended $272,825,000 for new equipment, while $425,996,000 was expended for roadway and structures.

Capital expenditures actually made for locomotives in the first nine months of this year amounted to $66,043,000, an increase of $21,356,000 above similar expenditures made in the corresponding period in 1929. For freight cars, expenditures so far this year have amounted to $162,356,000, an increase of $36,270,000 over the same period last year, while for passenger train cars, the railroads have spent $33,270,000 so far this year, or an increase of $5,758,000 above the nine months period one year ago. For other equipment, expenditures amounted to $11,156,000, compared with $12,404,000 in the same period last year.

Among expenditures for improvements of roadway and structures, the largest item was that for station and office buildings and other station facilities, which amounted to $69,340,000. This was an increase of $20,539,000 above similar expenditures made in the first nine months of 1929. For additional main track, the railroads spent $49,139,000, an increase of $4,870,000 above similar expenditures in the same period one year ago, while for yards and sid-



SOUTHERN RAILWAY
Locomotive Repair Shop
at Finley Shops
Birmingham, Alabama
1924

SOUTHERN RAILWAY
Office Buildings
Atlanta, Georgia
1928

60% Repeat Orders...

OVER 60% of our work for railroads has been repeat orders—a significant fact to those contemplating new shops, terminals and power plants.

Railroads we have served more than once—with the number of major authorizations—are as follows:

Atlantic Coast Line Railroad 2
Baltimore & Ohio Railroad 4
Boston and Maine Railroad 4
Canadian Pacific Railway 4
Central Railroad of New Jersey 4
Chesapeake & Ohio Railway 3
Chicago, Burlington & Quincy Railroad 2
Chicago, Rock Island & Pacific Railway 3
Chicago & Alton Railroad 2
Erie Railroad 2
Lehigh Valley Railroad 5
Missouri Pacific Railway 4
New York, New Haven & Hartford Railroad 3
New York, Westchester & Boston Railway 5
Pennsylvania Railroad 9
Southern Railway 6
Terminal Railroad Association of St. Louis 3
Wabash Railway 3

UNITED ENGINEERS & CONSTRUCTORS

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45 YEARS EXPERIENCE IN RAILROAD WORK

ings, $38,465,000 were expended, which was a reduction of $7,827,000 under the preceding year. For heavier rail, the railroads so far this year have spent $40,215,000, compared with $33,995,000 spent in the same period one year ago. Expenditures for additional ballast in the nine months this year have amounted to $9,755,000 compared with $11,533,000 in this preceding year.

For shops and enginehouses, including machinery and tools, capital expenditures so far this year have amounted to $24,127,000 compared with $23,838,000 in the same period in 1929. Capital expenditures for bridges, trestles and culverts for the first three-quarters of 1930 amounted to $44,384,000. In the same period last year, $43,253,000 were spent for the same purpose. For signals and interlockers, including telegraph and telephone lines, automatic train control, and other similar improvements, the railroads in the first nine months of the current year spent $28,998,000, an increase of $8,766,000 above expenditures for similar items one year ago. For all other improvements, $121,573,000 have been expended so far this year, compared with $90,918,000 for the same period one year ago.

No Rail Laws This Session

A comprehensive legislative program affecting railroads, including regulation of motor trucks carrying freight in interstate business, jurisdiction of the Interstate Commerce Commission over coastwise shipping, and other transportation proposals, has no prospect of consideration at the short session of congress, according to Representative Hoch (Rep.), of Marion, Kans. Mr. Hoch is a majority member of the house committee on interstate commerce and has been active in rail legislation.

"The Association of Railway Executives," he said, "has mapped out a sweeping program. It must be remembered that the session that begins next Monday is the short session, and I see no likelihood of the consideration of these matters at this session.

"I look for an increased demand to put pipe lines under the jurisdiction of the Interstate Commerce Commission. The railroads are under the commission. The business of the pipe lines is becoming quite a large factor in the freight transportation of the country. The pipe lines are developing rapidly and the volume of oil and gas that is piped figures substantially in the field of transportation operations.

"From a logical standpoint, there is no reason why trucks that carry freight in interstate commerce should not be put under regulation the same as motor buses that carry passengers. The motor passenger bus bill already has been passed by the house and is pending in the senate."

Representative Huddleston (Dem.), of Birmingham, Ala., a minority member of the house committee on interstate and foreign commerce, says he does not believe any railroad legislation will be enacted during the session of congress just begun.

"As far as the proposed legislation of the Association of Railway Executives is concerned, I do not favor any of the recommendations and do not think their suggestions would be good legislation."

A resolution, the purpose of which will be to allow western railroads to compete with shipping lines through the Panama Canal, will be introduced by Representative Knutson (Rep.), of St. Cloud, Minn., during the coming session of congress.

"I think the rates on ships should be equalized with those on railroads so that the roads can compete with the shipping lines," he said. "The shipping lines should be brought under supervision so as to prevent rebates."

Here's Another Air Line

A third transcontinental air route will be opened for passenger travel December 10, according to J. B. Alexander, western manager for Southern Air Fast Express, division of American Airways. This is to be made possible by establishing passenger service by Eastern Air Transport, operators of the line between Atlanta-Washington-New York. Connection is made at Atlanta with Southern Air Fast Express. Stopovers are included at all principal cities enroute, including Phoenix, Tucson, El Paso, Ft. Worth, Dallas, Jackson, Shreveport, Washington, D. C., Baltimore and Philadelphia. The new route, according to Mr. Alexander, being through the South, is one day longer, but offers the probability due to weather conditions and terrain of being flown with a greater degree of safety.

Mr. Alexander also received advice from R. J. Smith, general traffic manager, New York, of American Airways, that National Air Transport is establishing passenger service between New York and Chicago, making connections at the former point with tri-motor planes of the Colonial division for Boston, and further that the Colonal division of American Airways is now making a connection at New York for Boston passengers with Ledington Line planes, serving Philadelphia and Boston.

W. N. Doak to the Cabinet

Thirty years ago William N. Doak was a railroad clerk for the Norfolk & Western, earning $1.30 a day. Now he has been nominated by President Hoover to be secretary of labor at $15,000 a year.

Mr. Doak is vice president of the Brotherhood of Railroad Trainmen and counsel at Washington for that organization. A rather complete sketch of his life was published in this magazine in the issue of February, 1929.

Ask For Lower Rates on Fruit

The California railroad commission filed with the Interstate Commerce Commission in Washington Dec. 1, a brief supporting its contention that freight rates on deciduous fruits moving east from California should be reduced.

The brief reviews the act of the commission in 1927 in reducing freight rates on deciduous fruits from $1.73 to $1.60 per hundred pounds to territory east of Denver and from $1.62 to $1.50 in territory west of Denver.

These rates prevailed during 1928 and until July 19, 1930, a saving to California shippers of approximately $3,000,000, but in June, 1930, the Supreme Court annulled the order because, it held, the commission based its ruling on an erroneous construction of the so-called Hoch-Smith resolution in congress.

'Frisco Seeks Subsidiary

A motion was filed with the Interstate Commerce Commission by the St. Louis-San Francisco Railway Nov. 21 to amend the commission's railroad consolidation plan so as to allocate the St. Louis Southwestern Railway and the St. Louis Southwestern Railway of Texas to the Rock Island-Frisco System in lieu of the Illinois Central System as now contemplated by the plan.

The Frisco says in support of its motion that "such transfer of the St. Louis Southwestern Railway Company and its subsidiary lines to System No. 19 (Rock Island-Frisco) will be in the public interest and in harmony with the purpose of congress as expressed in the Consolidation Act."

The motion was signed by President J. M. Kurn of the Frisco.

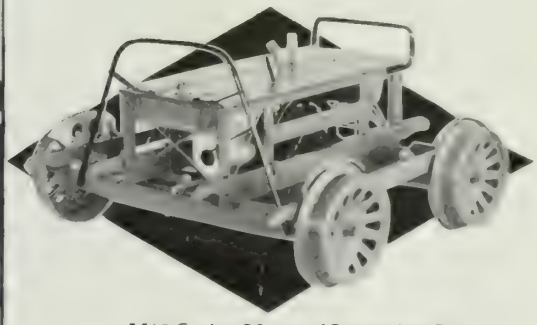
Belt Line Purchase Is Disapproved

The proposal of the Southern Pacific Company and the Central Pacific Railway to purchase control of the Union Belt Railway in Oakland, for $150,000, were disapproved by the Interstate Commerce Commission on Nov. 14. The commission disapproved a similar proposal to purchase the belt line made by the Western Pacific Railroad some time ago.

"It is not established," said the report, "that the price proposed to be paid by the Southern Pacific for the Union Belt Company's properties is reasonable and proper and compatible with the public interest, and our approval and

SECURITY

By treacherous rivers, in mountain passes, on empty prairies — an army of workers is always on guard over the $25,000,000,000 worth of Railroad property — insuring against any possible let-up in service, and protecting the precious cargoes riding the rails.



M19 Spring Mounted Inspection Car

This car is very popular with linemen and signalmen. Handles four boxes of battery renewals, two 10-gallon cans of water and two men — or, the car comfortably seats four men. Other inspection models include: C1 — air cooled for one or two men, and MM9 — water cooled for one or two men. Complete details at your request.

While no price is too high to pay for security, the gigantic scale upon which the Railroad World operates demands that the cost be reasonable as possible. Every tool, every product used on maintenance work is carefully checked in service as to efficiency, dependability and cost of operation. No claims or guesses count — only facts and figures. The Railroad World KNOWS!

And the Railroad World KNOWS Fairmont Equipment — knows it to represent ***Lowest Over-all Cost.*** That is proved by the fact that ***over half of all the motor cars now in use are Fairmont products!*** Few, if any, products used in maintenance work bear such an endorsement. And as long as Railroads are operated on figures, the great majority of Motor Cars riding the rails will bear the Fairmont shield.

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Fairmont Mudge — Performance on the Job Counts

THE RAILROAD WORLD KNOWS FAIRMONT

authorization of the proposed transaction therefore must be withheld."

Taxes Wasted, He Says

Less and wiser spending was the theme of the 15th annual convention of the National Association of State Auditors, Comptrollers and Treasurers in session at New York Nov. 18. The president of the association, W. S. Johnson, state treasurer of West Virginia, told the meeting that "we must learn to live within our income the same as the frugal housewife does in the home."

"I am convinced," he continued, "that at least 40 cents of every tax dollar collected in the United States is wasted." The average wage earner, he declared, contributes one day's work every week for taxes. Individuals and business institutions last year had a total income of 87 billion dollars, of which 13 billions went for taxes.

Governments are overmanned by 25 per cent, the association president asserted. It takes one person out of ten, according to statistics given by him, to administer our governments, national, state and local.

Three Classes of Fares January 1

In an effort to stimulate rail travel between Chicago and the Missouri River and Arizona and California, the Santa Fe System and the Western Pacific Railway will experiment with three classes of passenger fares for six months beginning January 1. Three rates will include existing fares good in standard sleeping cars on all trains; one-way tourist fares, which will be about 20 per cent less than existing fares and good in tourist sleeping cars, but not in standard sleepers; and one-way coach fares which will be 20 per cent less than tourist fares and good in coaches and chair cars.

Under the new plan standard sleeping car fare from Chicago to California will be $79.84; tourist fare $65 and coach fare $50. The berth rate in standard sleeping cars from Chicago to California is $23.63 and in tourist sleeping cars $12.75.

This plan is designed to place the cost of railroad travel within the reach of all. It is somewhat in line with classification used in ocean travel and in foreign countries, but this is the first time such classification will have been tried in the United States.

Rock Island Would Buy M. N. & S.

The Rock Island Lines are negotiating for the purchase of the Minneapolis, Northfield & Southern, operating 140 miles of road, from Minneapolis to Faribault and Mankato, Minn. The road has strategic value because it intersects the Soo Line, Northern Pacific, St. Paul, Minneapolis & St. Louis, and Great Northern lines; connects with Chicago Great Western by a cut-off from Randolph, Minn.; operates as a belt line around the city of Minneapolis, and has terminals in the downtown section of the town. Under the Interstate Commerce Commission's plan of consolidation the line was allocated to the Atchison system.

Net Ton Miles Decrease

The volume of freight traffic handled by the Class I railroads of this country in September this year amounted to 36,219,944,000 net ton miles, according to reports received from the railroads by the Bureau of Railway Economics and made public November 21. Compared with September, 1929, this was a reduction of 8,002,066,000 net ton miles or 18.1 per cent, and a reduction of 7,571,395,000 net ton miles or 17.3 per cent under September, 1928.

In the eastern district, the volume of freight traffic handled in September, this year, was a reduction of 20.5 per cent compared with the same month in 1929, while the southern district reported a reduction of 19.3 per cent. The western district reported a reduction of 14.6 per cent.

The volume of freight traffic handled by the Class I railroads in the first nine months of 1930 amounted to 321,480,411,000 net ton miles, a reduction of 48,210,240,000 net ton miles or 13 per cent under the corresponding period in 1929, and a reduction of 27,837,372,000 net ton miles or 8 per cent under the same period in 1928.

Railroads in the eastern district for the nine months period in 1930 reported a reduction of 13.3 per cent in the volume of freight traffic handled compared with the same period in 1929, while the southern district reported a decrease of 13.5 per cent. The western district reported a decrease of 12.5 per cent.

The Motorist Must Pay

A verdict for $95.32 in favor of the Minneapolis, Northfield & Southern Ry. was returned Nov. 26, at Faribault, Minn., against Arthur Degan. Degan drove his automobile into the side of one of the company's motor trains. Attorneys for the railroad asserted the action was brought to test the rights of the company in crossing accidents. The company sued to recover damages sustained.

New York-Providence Ships

J. J. Pelley, president of the New York, New Haven & Hartford, announces discontinuance of the nightly passenger and freight service between New York and Providence of the historic Bay State Line which has been operated by the New England Steamship Company, a subsidiary of the lines. Traffic will be handled by the Providence Line, also a subsidiary of the railroad. Lack of traffic caused the change.

Consolidations Not Now Demanded

The drafting of an act for repeal of the provisions of the Transportation Act relating to railroad consolidations to be presented to the next session of congress was recommended by J. W. McCardle, chairman of the special committee on consolidation of railroads, to members of public utility regulating commissions from 38 states at the 42nd annual convention of the National Association of Railroad and Utilities Commissioners in session at Charleston, S. C., Nov. 21.

Mr. McCardle recommended that the special committee of which he is chairman be directed to draw up a bill repealing the consolidation provisions of the Transportation Act.

"Consolidations effected by compulsion and not coming as the natural result of conditions and circumstances can be productive of no good," he declared.

The public does not demand consolidation, Mr. McCardle asserted, and there is well defined opposition to it. The public has received little, if any, of benefits derived from consolidations already made, these benefits being reduced transportation costs and improved service, he said.

Work for 200 Men

A new policy of employment by which the Boston & Maine will create jobs for approximately 200 additional men is announced. This step to relieve unemployment will eliminate seven-day jobs in the mechanical department, without increasing the expense to the railroad, bringing in new men on five and six-day schedules to complete the railroad's working requirements.

Freights Show Higher Speed

The average speed of freight trains for the first nine months this year was the highest for any corresponding period on record, amounting to an average of 13.7 miles an hour, according to reports filed by the rail carriers with the Bureau of Railway Economics and made public November 21. This represents the average per hour for all freight trains between terminals, including yard and road delays, no matter from what cause. The average speed for the nine months period was an increase of six-tenths of one mile above that for the same period last year. The average speed of 13.7 miles per hour for September was also the highest for any September on record. The average daily

NOW A DAY coach seat that rotates as well as reclines

HERE is a chair that will help you increase day coach travel. This luxurious seat, the 162-PSS, not only reclines to four restful positions, but *rotates* as well — and on a small, space saving radius. It enables passengers to sit in groups, to face the windows and fully enjoy the scenic advantages of your route. It will bring to your day coaches more luxury and comfort per dollar of investment than any other style built today. The trim, practical design of the 162-PSS allows the arm rest to be placed flush against the side wall — actual cushion space is increased approximately two inches over present types of day coach seats. If you are contemplating the purchase of new or replacement seating for day coaches, it will prove well worth your while to investigate the new 162-PSS. Any of the offices listed below will be pleased to furnish you with complete information on the new 162-PSS or other types of Heywood-Wakefield railroad seating.

H-W rotating and reclining chair in C. B. & Q. R. R. day coach.

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516 West 34th St., New York City
J. R. Hayward, Liberty Trust Bldg., Roanoke, Va.
H. G. Cook, Hobart Bldg., San Francisco, Calif.
311 Railway Exchange Bldg., Chicago, Ill.
A. W. Arlin, Delta Bldg., Los Angeles, Calif.
The G. F. Cotter Supply Co., Houston, Texas

The Railway and Power Engineering Corporation
133 Eastern Ave., Toronto; Montreal; Winnipeg, Canada

movement per freight car in September this year was 29.9 miles, compared with 34.2 miles for the same month last year and 33.8 miles in September, 1928.

In computing the average movement per day, account is taken of all freight cars in service, including cars in transit, cars in process of being loaded and unloaded, cars undergoing or awaiting repairs and also surplus cars on side tracks for which no load is immediately available. The car surplus in September this year was greater than in the same month of 1929 by 184 per cent, which had an undoubted effect on the reduction in daily movement per freight car.

The average load per car in September this year was 26.8 tons, including less than carload lot freight as well as carload freight. This was a decrease of three-tenths of one ton below the average for September, 1929, but an increase of one-tenth of one ton above that for September, 1928.

The Perfect Drain

The Inland Steel Co., 38 So. Dearborn street, Chicago, announces the addition of another roofing sheet to its line of products, "Perfect Drain" Channel Roofing. This roofing embodies a new principle in protection, providing a triple barrier against water. This feature, it is said, makes this roofing watertight against the severest rain storms. It cannot be laid incorrectly, and is equally effective for siding as well as roofing factories, freight houses, storehouses, sheds or barns. Made of Inland open hearth steel, it is galvanized for durability. A descriptive folder is now ready for distribution.

Radio for Freights

After several years of experimental work, the telegraph and telephone section of the American Railway Association announced Oct. 13 that the use of radio as a means of maintaining communication between both ends of freight trains has been found practicable, and suitable apparatus has been developed for that purpose.

Up to the present means of communication between crews at the front and rear of freight trains has been difficult, being principally through the use of hand signals, which is not always a satisfactory method, especially in times of inclement weather or when trains stop on curves. By means of short wave radio sets in the caboose and locomotive cab, it has now been found possible to keep both ends of a train in constant communication, which will not only add further to safety in train operation, but also will eliminate many delays. The use of radio as means of expediting communication has also been found to be practicable at hump yards, where cars are classified and made up into trains.

Car Loadings Decline

Loading of revenue freight for the week ended November 15 totaled 829,251 cars, a reduction of 52,150 cars under the preceding week. This was 153,675 cars below the same week last year, and 226,869 cars below the same week in 1928, as reported Nov. 26, by the car service division of the A.R.A. Miscellaneous freight loading for the week of November 15 totaled 308,452 cars, 65,568 cars under the same week in 1929 and 87,530 cars under the same week in 1928. Loading of merchandise less than carload lot freight amounted to 231,261 cars, 28,282 cars below the week last year and 29,137 cars below the same week two years ago. Coal loading amounted to 166,945 cars, 14,588 cars below the same week in 1929 and 31,942 cars under the same week two years ago.

Grain and grain products loading for the week totaled 37,065 cars, 1,155 cars above the same week in 1929 but 15,774 cars below the same week in 1928. In the western districts alone, grain and grain products loading amounted to 25,081 cars, an increase of 1,201 cars above the same week in 1929.

Live stock loading totaled 29,663 cars, 3,778 cars under the same week in 1929 and 5,842 cars under the week in 1928. In the western districts alone, live stock loading amounted to 23,724 cars, a decrease of 3,042 cars compared with the same week last year.

Railway Construction

Tracks & Yards

MICHIGAN.—The Michigan Central has permission to build a line from a point on its Grand Rapids division westerly 2.95 miles to a connection with the former Michigan railroad, an interurban electric line, and to rebuild that company's old line northerly to Bridge street, Grand Rapids, about 10.25 miles. The new line will cost $184,835, and the rebuilding of the old Michigan road, $858,000. The extension will be operated by the New York Central, and provide switching service in and near Grand Rapids.

PENNSYLVANIA.—As the first part of improvements on the Baltimore & Ohio, calling for a total cost of about $1,185,000, contracts have been let for the building of second track, revision of main track and extension of passing sidings between Hayes borough and West Alexander, about 48 miles. In this territory, existing sections of double track are to be connected between Bruceton and Finleyville, about five miles, giving double track for 17 miles, and suitable intermediate passing sidings at six new locations. The immediate work calls for an expenditure of $505,000.

—The Reading is planning to extend its present electrification program from Langhorne, Pa., to West Trenton, N. J., 8.9 miles. This addition brings the electrification work now authorized to 69 route miles and 161 track miles, and the total cost to about $21,500,000.

TEXAS.—The Port Terminal Railroad Assn. has let a contract to the Lone Star Construction Co., Houston, for a 7.76-mile extension at Houston to serve the north side of the ship channel.

Buildings & Structures

CALIFORNIA.—Los Angeles. The Los Angeles & Salt Lake has let a contract to the J. V. McNeil Co., Los Angeles, for a warehouse with cold storage facilities to cost $3,500,000.

CANADA.—Saskatchewan. The Canadian National has let a contract to Theodore Bockstael, St. Boniface, Man. for 16 buildings including stations and other structures on the Hamlin-Glenbush branch. A contract for similar buildings on the Melfort-Aberdeen branch has been let to William C. Wells, Wilkie, Sask.

ILLINOIS.—Chicago. The Pullman Company is planning to build and operate a laundry at 333 West 43 street. The plant will cost about $500,000 and will employ 87 persons, investment to be increased later to $700,000, and the number of employes to 150.

LOUISIANA.—New Orleans. The public service commission has directed the Illinois Central to file with it plans and specifications for a union station here.

MISSOURI.—Kansas City. The Missouri Pacific is planning to build a grain elevator of 2,500,000 bu. capacity, involving eight miles of yard trackage, to cost $1,800,000. The elevator will be leased to the Continental Export Co.

—Reed Springs. The Missouri Pacific has let a contract to A. Guthrie & Co., St. Paul, for the filling of three bridges near here.

—Kansas City. The Kansas City Terminal has let a contract to the McClin-

Triple HEAT TREATED

THE Davis Wheel owes its unusual «One-Wear» qualities to the triple heat treatment of a special composition steel. The heat treated alloy steel of the Davis Wheel permits the manufacture of a light wheel with a resilient plate, a stronger wheel and one whose «One-Wear» principle reduces operating costs per wheel mile » » » » » » »

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

tic-Marshall Co., Chicago, for the superstructure of a viaduct over Oak street to cost $95,000.

NEW YORK.—New York City. Demolition and foundation work for Manhattan's first union inland freight station, described in the July issue of *Transportation, Page 48,* will be hastened by the Port of New York Authority to help in alleviating the unemployment situation. The block selected for the terminal is bounded by Eighth and Ninth avenues, West Fifteenth and West Sixteenth streets. The terminal will be 14 stories high and will be used by all railroads in the port district for delivery and receipt of less-than-carload freight, and will represent an investment of $16,000,000, including the real estate. The first contract will be let before the end of the year.

PENNSYLVANIA.—Pittsburgh. The first river-rail coal trans-shipment plant to be provided by the Pennsylvania Railroad on the Ohio River will be built near the east end of Conway yard, just west of Baden, 20 miles from here, on the main line from Pittsburgh to Great Lake ports. Authority for the expenditure of about $350,000 has been given by the board. Contract for the crane and necessary dredging will be let by the Pennsylvania through the office of W. D. Wiggins, chief engineer, Pittsburgh.

Buses

Deliveries effected since the November issue of *Transportation* are as follows: American Car & Foundry Motor Co., to the Huntington & Broad Top Transit Co., one 21-pass. motor coach; Alton Transportation Co., Chicago, one 33-pass. motor coach; from the Cincinnati Car Corpn., to the New Orleans Public Service, Inc., 11 trackless 40-pass trolley coaches; from Mack International to the St. Andrews Bay Railroad Co., Panama City, Fla., two model AB 23-pass. sedans; from White Coach to West Ridge Transportation Co., Girard, Pa., one model 65 bus; West Penn Electric Co., Pittsburgh, Pa., one model 54 bus; Consolidated Coach Corpn., Lexington, Ky., 6 model 54 buses; British Columbia Electric Co., Vancouver, B. C., two model 613 buses. Other deliveries reported are to West Ridge Transportation Co., Girard. Pa., five type W 21-pass. observation coaches; Washington Rapid Transit Co., Washington, D. C., one type "230" 33-pass. observation coach, one type Z 29-pass. observation coach; Consolidated Coach Co., Lexington, Ky., six type Z 29-pass. observation coaches.

Passenger Cars

The Interborough Rapid Transit Co., is inquiring for 280 subway cars; the Canadian Pacific for 50 passenger cars; Denver & Rio Grande for two dining cars; Philadelphia & Western, 12 interurban cars; the Western Fruit Growers' Express reports the purchase of 100 steel underframes from Siems-Stembel Company plant of the Standard Steel Car Company. These underframes are for refrigerator cars to be used in passenger train service.

Locomotives

Reports of Class 1 railroads filed with the American Railway Association show that on November first 4,936 locomotives (8.9 per cent of number on line) were in need of classified repairs. This was a decrease of 69 under October 15, when there were 5,005 or nine per cent. On the same date 7,514 servicable locomotives were in storage as compared with 7,618 on October 15.

In the first ten months of this year 694 new locomotives were placed in service compared with 612 in the same period last year. New locomotives on order November first totaled 139 or a decrease of 155 under the number on order the same date last year. Locomotives leased or otherwise acquired are not included in the foregoing figures.

The New York Central is asking for bids on 50 new 4-6-4 Hudson J 1-C type locomotives and the St. Louis Southwestern is reported inquiring for ten engines.

The Milwaukee advises us that it is inquiring for prices on 40 freight and 17 passenger locomotives for delivery early in 1931. The Chicago & Illinois Midland has ordered two 2-10-2 type locomotives from the Lima Locomotive Works; the Great Northern, which is constructing 25 class 0-7 Mikados, has 12 of the order yet to build; the Litchfield & Madison has ordered two 2-8-2 type locomotives from the American Locomotive Works; the Southern Pacific is planning to construct six 0-8-0 type switching engines in its own shops during 1931, using parts from old Mallet engines.

Freight Cars

Reports of Class 1 railroads filed with the American Railway Association show that during the first ten months of 1930 they placed in service 73,887 new freight cars against 68,073 last year. Of this number 38,443 were box cars, an increase of 5,264 over the same period last year.

During the first ten months of this year they placed in service 26,906 new coal cars, an increase of 2,013 over the number installed during the same period of 1929. In addition, during this same period, 3,583 flat cars, 3,657 refrigerator cars, 913 stock cars and 385 other miscellaneaus cars were installed.

On November first 5,781 new freight cars were on order compared with 33,642 on order the same date last year, and with 6,081 on order the same date two years ago.

Since the November issue of *Transportation* the following inquiries for freight cars have been reported: The Canadian National for 3,000 box, 500 gondola, 500 service cars and material for 500 refrigerator cars; The Caloric Co., ten 50-ton tank cars; Chicago & Illinois Midland, 400 gondola and 400 hopper cars; Neville Chemical Co., five 10,000 gals. capacity tank cars; Sanitary District of Chicago, 25 dump cars; Standard Oil Co., of N. Y., three 3,000 gals. and three 6,000 gals. capacity tank cars; Seaboard By-Products Coke Co., of Pittsburgh, prices on 248 fifty-five ton hopper cars to be repaired, and the Youngstown Sheet & Tube Co., 20 to 40 gondola car bodies.

New cars ordered are reported as folfows: Chicago Great Western, 300 seventy-tons capacity steel hopper bottom coal cars from the Pullman Car & Mfg. Co.; Fruit Growers' Express, 100 steel underframes for refrigerator cars from the Greenville Steel Car Co.; the Great Northern is applying steel underframes to box cars at the rate of 250 a month; Missouri Pacific is constructing 168 single-heated box car bodies of 40-tons capacity, which will be equipped with old trucks, and 625 gondola car bodies of 50-tons capacity, in its own shops at Desoto, Mo.; Pacific Fruit Express, 300 steel underframes for refrigerator cars from the Pacific Car Foundry Co., and 300 steel underframes for refrigerator cars from the Western Pipe & Steel Co.; the Standard Refrigerator Car Co., 45 refrigerator cars of 40-tons capacity from the English Car & Mfg. Co., and the Virginian, 500 fifty-five-ton capacity hopper cars from the Virginia Bridge & Iron Co.

The Northern Pacific will start at once to expend $4,500,000 in the largest car rebuilding program it ever has undertaken on its own system. About 600 men will be added to the company's forces for fully a year, involving an addition of about $1,000,000 to the company's payroll. The program calls for the rebuilding and modernizing of 3,000 cars to present day standards, including 1,000 refrigerator cars, 1,000 box cars, construction of 500 coal cars into box cars and 500 box cars into live stock cars. These cars will be stripped to the trucks in rebuilding and such parts as can be used will go into the reconstruction work. New material necessary will be purchased, which will call for 20,000 tons of fabricated steel, 18,000,000 feet of lumber, 2,700 tons of iron and steel castings, 3,000 tons of steel forgings and 6,000,000 square feet of insulating material.

THE TEST OF TIME

The economical value of a device which automatically couples air, steam and signal hose is readily apparent to discerning railroad officials. But to be completely satisfactory such a device must prove itself practical and present a record of successful operation under all track and climatic conditions.

Surely an automatic connector that has been developed and perfected in actual train service over a period of fifteen years must have much to recommend it—and such is the AMERICAN AUTOMATIC CONNECTOR.

Not only has the AMERICAN AUTOMATIC CONNECTOR successfully withstood the test of time, but it has to its credit more than 150,000 train miles of service over the large railroads of the United States without a single delay directly attributable to the connector.

May we send you further information?

THE CONSOLIDATED CONNECTOR CORPORATION
118 Noble Court • Cleveland • Ohio

Changes in Personnel

Executive & Operating

The Union Pacific announces that **C. E. Brooks,** superintendent Montana division, has retired under the pension rules of the company after 40 years' service. The Montana division has been abolished and the Utah division extended to include main line and branches from Pocatello to Butte, under the jurisdiction of **A. L. Coey,** superintendent. The Idaho division has been extended to include main line and branches from and including Pocatello to Granger, Wyo., under the jurisdiction of **E. C. Manson,** superintendent. **A. R. McNitt,** freight claim agent at Omaha has been appointed general freight claim agent of the Union Pacific System, including the St. Joseph & Grand Island, with the same headquarters.

The Pennsylvania announces the appointment of **Ralph C. Miller,** acting chief engineer at Philadelphia, as general superintendent of the southwestern division with headquarters at Indianapolis, Ind., succeeding **Oliver P. Reese,** deceased.

Jonathan C. Gibson, chairman of the recapture board of the Interstate Commerce Commission has resigned to become a member of the law firm of Olcott, Holmes, Glass, Paul & Havens, New York.

Frank G. Minnick, general manager of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, has been appointed special assistant to the vice president with headquarters as before at Pittsburgh. **Michael A. Smith,** superintendent motive power of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, succeeds Mr. Minnick; **James L. O'Toole,** superintendent freight transportation, has been appointed assistant to general manager; **Frank L. Foster,** assistant superintendent freight transportation, succeeds Mr. O'Toole. All will have headquarters as before at Pittsburgh.

Charles W. Brown, general superintendent of the Lehigh & New England at Bethlehem, Pa. has been appointed general manager of the Western Maryland with headquarters at Baltimore. **W. H. Edwards,** cost engineer of the Baltimore & Ohio succeeds Mr. Brown.

C. G. Lunday, general manager of the Louisiana & Arkansas at Minden, La., has been elected vice president with headquarters at Shreveport.

J. L. Burns has been appointed assistant to the chairman of the M-K-T Lines with headquarters at St. Louis.

F. R. Raiff, vice president of the Copper River & Northwestern and the American Smelting & Refining Co. with headquarters at New York, has been elected president also of the Arizona Southern. **B. R. Hatcher** has been elected vice president and general manager; **F. E. Price,** assistant to the president and general manager, has been elected treasurer. Both will have headquarters at Tucson.

G. C. Baird, assistant land commissioner of the Canadian National at Winnipeg, has been appointed land commissioner with the same headquarters succeeding **E. A. Field,** retired. **O. S. Clefstad,** collection manager in the land department, succeeds Mr. Baird. **E. W. MacKinnon** has been appointed acting superintendent of the Island division with headquarters at Charlottetown, P. E. I. succeeding **J. D. MacNutt,** granted leave of absence because of illness.

C. E. Carlson, president of the Duluth, Missabe & Northern with headquarters at Duluth, has been elected president also of the Duluth & Iron Range.

C. H. English, superintendent of the central division of the Central Railroad of New Jersey, has been appointed, at his own request, superintendent telegraph and telephone succeeding **C. H. Gaffeney,** deceased. **R. V. Reamer,** superintendent of the Lehigh and Susquehanna divisions succeeds Mr. English. **A. R. Young,** assistant superintendent of the central division succeeds Mr. Reamer.

H. S. Parrish, division superintendent of the Wheeling & Lake Erie at Brewster, Ohio, has been appointed superintendent of transportation with the same headquarters. The position of superintendent at that point has been abolished.

J. W. Rea, general superintendent of the eastern district of the Missouri Pacific with headquarters at St. Louis, has been appointed executive assistant with headquarters at Little Rock.

Bradford W. Carlton has been appointed acting assistant to the president of the Chicago & North Western at Chicago.

J. C. Yocum has been appointed assistant to the vice president and general manager of the Chicago, St. Paul, Minneapolis & Omaha with headquarters at St. Paul.

L. J. Ferritor, superintendent on the Wabash with headquarters at Buffalo, N. Y., has been appointed special representative with the same headquarters. **J. G. Rohlman** succeeds Mr. Ferritor.

F. T. Wilbur, superintendent of telegraph on the northern and western lines of the Illinois Central with headquarters at Chicago, has been appointed superintendent of telegraph of the entire system with the same headquarters.

R. H. Tuttle, superintendent of the Los Angeles division of the Santa Fe Lines with headquarters at San Bernardino, Cal., has resumed his duties after a leave of absence of several months.

Frank J. Wall has been appointed vice president in charge of traffic of the New Haven Lines, succeeding **Benjamin Campbell,** retired. Mr. Wall was assistant to the vice president of the New England Steamship Co. in New York from 1920 to July, 1929, when he was transferred to New Haven as assistant to Mr. Campbell.

Frederick N. Melius, assistant general manager of the New York Terminal district of the New York Central has been elected president of the United States Freight Co. and the Universal Carloading & Distributing Co., a subsidiary. **A. E. Lloyd,** assistant to vice president in charge of operation, has been appointed general superintendent of the New York Terminal district, including the marine department, succeeding Mr. Melius. **J. E. Davenport** and **A. H. Wright,** assistants to assistant general manager, have been appointed assistants to the general superintendent.

Mrs. Charles N. Whitehead, whose husband was president of the Missouri-Kansas-Texas for a short time before he died, has been appointed assistant to the president of that road, M. H. Cahill.

Frederick J. Freese, trainmaster of the Evansville division of the Chicago & Eastern Illinois, at Danville, Ill., has been appointed assistant superintendent of the St. Louis division, with headquarters at St. Louis, succeeding **Sampson S. Huffman,** deceased.

H. R. Gibson has been appointed superintendent of the Monongah division of the Baltimore & Ohio with headquarters at Grafton, W. Va. **W. Trapnell** has been appointed assistant superintendent with headquarters at Weston, W. Va. These appointments became effective October 1 when the Charleston division was consolidated with the Monongah division.

H. J. Main, superintendent of the Moose Jaw division of the Canadian Pacific at Moose Jaw, Sask., has been transferred to the Saskatoon division at Saskatoon, Sask. **J. A. Macgregor,** superintendent of the Saskatoon division, has been transferred to the Moose Jaw division.

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EACH year the toll in fatalities and damage to property at grade crossings grows larger. Each year the number of cars, trucks and buses traveling the highways increases. And each year the elimination of dangerous crossings by grade separation proves inadequate due to physical reasons and high costs.

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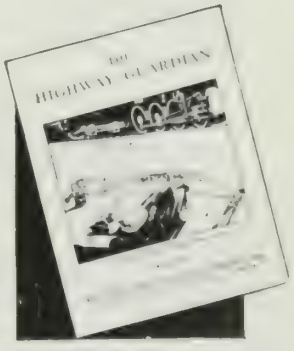

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THE HIGHWAY GUARDIAN

THE CROSSING GATE THE MOTORIST CANNOT CRASH

Financial & Legal

P. Nichols, superintendent of terminals of the Atlantic Coast Line at Port Tampa, Fla., has been appointed treasurer succeeding **John T. Reid,** deceased.

Thomas M. Prentice, assistant to controller of the New Haven Lines, retired October 31 after 52 years' service.

George B. Betts, assistant car accountant of the Grand Trunk Western with headquarters at Detroit, has been appointed car accountant succeeding **O. F. Clark,** retired. The position of assistant car accountant at Detroit has been abolished.

George W. Hesslau has been appointed assistant general claim agent of the Baltimore & Ohio at Youngstown, and **Paul C. Garrott** has been appointed to a similar position at Baltimore. **Robert B. Banks** has been appointed assistant to general claim agent at Baltimore.

Purchases & Stores

The Pennsylvania announces the appointment of **Col. Chas. D. Young** as assistant vice president in charge of purchases, stores and insurance. In addition to his new duties, Colonel Young will continue as general purchasing agent, the position he now holds.

T. A. Donovan has been appointed purchasing agent of the New Brunswick district of the Canadian Pacific with headquarters at St. John, N. B.

The headquarters of **L. C. Rose,** purchasing agent of the Colorado & Wyoming has been moved from Denver to Pueblo.

Traffic

E. R. Bardgett, general agent of the Cunard Line in New York, has been appointed general traffic manager of the Western Maryland Ry. Mr. Bardgett has been associated with the Cunard Line for eleven years, starting as manager of the freight department in Cleveland in 1919. Later he was transferred to New York where he became general freight agent. He served as president of the Traffic Club of New York in 1928. Mr. Bardgett began his transportation work in the office of the Northern Steamship Co., Buffalo, as a junior clerk. He then joined the Lehigh Valley as a traveling freight agent. He served this line in various official capacities in Indianapolis, Chicago, St. Louis, and Cleveland, at the latter post acting as general agent. For several years he was general eastern agent of the Chicago & Alton with headquarters in New York.

R. W. Owens, assistant general freight agent of the Wabash at Kansas City, Mo., has been appointed, at his own request, special traffic representative with the same headquarters. **W. E. Alderson,** division freight agent at Kansas City succeeds Mr. Owens.

Charles H. Markham

The Union Pacific announces the appointment of **G. L. Leonard** as district freight and passenger agent at Tacoma, succeeding **T. I. McGrath,** deceased.

J. A. Boyce, Jr. has been appointed district freight agent of the Baltimore & Ohio at Toledo.

Mechanical

George W. Imgrund, master mechanic of the Chicago & Illinois Midland with headquarters at Taylorville, Ill. has been appointed superintendent of motive power with the same headquarters. This appointment became effective last month when the locomotive and car departments were consolidated.

Karl Berg, assistant superintendent motive power of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, has been appointed superintendent motive power with headquarters as before at Pittsburgh, succeeding **Michael A. Smith.**

Robert Hunt, mechanical engineer of the Seaboard Air Line, has been appointed assistant general superintendent, motive power, with headquarters at Norfolk. The position of mechanical engineer has been abolished. **W. J. Pardue,** general inspector, freight and passenger equipment, has been appointed master car builder with headquarters at Norfolk. His former position has been abolished.

R. H. Cline has been appointed master mechanic of the Monongah division of the Baltimore & Ohio with headquarters at Grafton, W. Va. **F. E. Cooper** has been appointed assistant master mechanic at Gassaway, W. Va. These appointments became effective October 1 when the Charleston division was absorbed by the Monongah division.

J. M. Nicholson, fuel conservation engineer of the Santa Fe Lines with headquarters at Topeka, has been appointed master mechanic of the Slaton division of the Pan Handle & Santa Fe at Slaton, Tex. succeeding **G. R. Miller,** transferred to the Pecos division of the Santa Fe at Clovis, N. M., succeeding **W. W. Walker,** resigned.

G. T. Goddard, general foreman in charge of electrical rolling stock of the Illinois Central, has been appointed electrical engineer, equipment, with headquarters at Chicago.

J. P. Driscoll, master mechanic of the Erie at Secaucus, N. J. has been appointed master mechanic at Jersey City succeeding **S. J. Kelley; C. J. Gerbes,** master mechanic at Hornell, N. Y. succeeds Mr, Driscoll; **B. E. Jones,** supervisor of motor cars at New York succeeds Mr. Gerbes.

M. L. Crawford, assistant master mechanic of the northern division of the Frisco Lines at Monett, Ark., has been appointed master mechanic of the central division at Fort Smith, Ark. succeeding **J. D. Heyburn,** appointed road foreman of engines on the eastern division at Springfield, Mo.

William Gouge, passenger car foreman in the central region of the Canadian National at Toronto, has been appointed superintendent of shops at Leaside, Ont., succeeding **Otis Grant,** deceased. **A. Saunders** has been appointed master mechanic of the Hornepayne division at Hornepayne, Ont. succeeding **W. A. McCarthy,** deceased.

Civil

Following the consolidation of the signal and telegraph departments of the Lehigh Valley last month, **H. W. Lewis,** signal engineer at Bethlehem, has been appointed engineer of signals and telegraph; **W. J. Kocher,** assistant signal engineer, and **J. F. Caskey,** superintendent of telegraph, have been appointed assistant engineers of signals and telegraph, with headquarters as before at Bethlehem. The positions of signal engineer, superintendent of telegraph, and assistant signal engineer have been abolished.

C. T. Jackson, special engineer of the eastern lines of the Milwaukee has been appointed district engineer of the southern district with headquarters as before at Chicago succeeding **D. C. Fenstermaker,** assigned to other duties. **C. J. Swane,** division engineer on the western lines at Lewiston, Mont., has been transferred to the newly created Mil-

waukee division with headquarters at Milwaukee.

J. Edwards, Jr. has been appointed division engineer of the Monongah division of the Baltimore & Ohio with headquarters at Grafton, W. Va. This appointment became effective October 1 when the Charleston division was combined with the Monongah division.

H. G. Holloway, assistant engineer on the Wabash at Springfield, Ill. has been appointed division engineer of the Detroit and the Detroit Terminal divisions with headquarters at Montpelier, Ohio.

A. B. Stone has been appointed bridge engineer of the Norfolk & Western with headquarters at Roanoke, succeeding **L. L. Kelly,** deceased.

L. C. Sprague has been appointed consulting engineer of the Wichita Northwestern with headquarters at New York.

H. A. Appelby, chief draftsman in the office of the signal engineer of the western lines of the Santa Fe, has been appointed assistant signal engineer with headquarters as before at Amarillo succeeding **D. K. Crawford,** deceased.

J. P. Muller has been appointed signal construction engineer of the Boston & Maine with headquarters at Boston.

Obituary

Charles H. Markham, chairman of the board of the Illinois Central Railroad, died November 24 at Altadena, a few miles from Los Angeles. The immediate cause of death was a paralytic stroke following long illness. Mr. Markham was 69 years old.

Mr. Markham came to California last winter and for several months he lived quietly at Altadena hoping to regain his failing health. After a few months' rest he improved sufficiently to permit his return to Chicago. It soon became apparent, however, that he could not again undertake the arduous duties of chairman, and his return to Altadena was decided upon. His death had been expected for several days when the end came.

A rather extended review of Mr. Markham's life was printed in *Transportation* last July as one of the Little Stories of Big Men. It is necessary now only to say that he started his railroad career as a section hand on the Santa Fe Railway in 1881 at Dodge City, Kan., when he was 20 years old. In the way characteristic of all railroad men who have been successful he rose through the various grades and duties common to the industry, was employed by several railroads, assuming constantly increasing responsibilities, and came, finally, into the presidency and later the chairmanship of the Illinois Central.

Mr. Markham was born at Clarksville, Tenn., in May, 1861, but spent most of his boyhood at Addison, N. Y.

Henry Lang, vice president of the Ingersoll-Rand Company, New York, died at his home in Montclair, N. J., November 10, aged 66.

George Lee Morton, vice president of the Galena Oil Corpn., died unexpectedly October 19 in New York City. Colonel Morton was born in Wilmington, N. C., December 10, 1856. He served in North Carolina both as speaker of the house and president of the senate, and was a member of the governor's staff during the Spanish-American war. He was founder and several times president of the Southern & Southwestern Railway Club.

Thomas J. Milner, formerly chief engineer of a number of western short lines, died at Portland, Ore., November 7, aged 81. In 1884 Mr. Milner was engineer in charge of the design and construction of the Georgetown loop near Georgetown, Colo., on the Georgetown, Breckenridge & Leadville, now a part of the Colorado & Southern.

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William P. Hayden, assistant general manager of the Colorado & Southern with headquarters at Denver, died unexpectedly, November 6, aged 62.

William R. Shelby, who retired in 1912 as vice president and treasurer of the Grand Rapids & Indiana, now a part of the Pennsylvania, died at Grand Rapids, November 14, aged 87. Mr. Shelby had been engaged in railway work for 43 years.

Edward Conrad Waldvogel, a director and vice president of the Yale & Towne Manufacturing Co., Stamford, Conn., died at his home in New Rochelle, N. Y., November 13.

Edgar Van Etten, former vice president of the New York Central & Hudson River (now the New York Central) in charge of the Boston & Albany, and more recently vice president of the Chesapeake Western, died at Sacramento, November 18, aged 87.

Addison H. Beale, president of the A. M. Byers Company, Pittsburgh, died October 28.

Charles E. Wachtel, secretary and treasurer of the Duluth & Iron Range, died at Duluth, November 6, after a brief illness.

Emile Coupard, divisional manager in Cuba, West Indies and Mexico, for the White Company, died at San Juan, October 28.

Frederick M. Hubbell, for nearly 40 years an officer of various short line railroads in central Iowa, died at his home in Des Moines, November 11.

Walter J. Towne, chief engineer of the Chicago & North Western with headquarters at Chicago, died at his home in Oak Park, Ill., November 23.

James M. Hayes, superintendent of work equipment of the Milwaukee Lines with headquarters at Chicago, died at Chamberlain, S. D., October 30.

Edgar E. Clark, a member of numerous national commissions during the last 30 years, died at his home in Monrovia, Calif., December 1. Mr. Clark was born in Lima, N. Y., February 18, 1856, and spent the earlier part of his life in New York state where he attended Williams College and received the degree of LL.D. In 1902 he received his first public appointment when he was named on the Anthracite Coal Strike Commission. In 1906 President Roosevelt appointed him to the Interstate Commerce Commission, where he remained until 1921. He was appointed also to the Eight-Hour Commission in 1917. Mr. Clark resigned from the Interstate Commerce Commission to form the present law firm of Clark & La Roe, Washington, D. C. He came to California a year ago last June because of ill health.

Henry Harnischfeger, president of the **Harnischfeger Corporation,** Milwaukee, died, November 15.

Oliver P. Reese, general superintendent of the southwestern division of the Pennsylvania with headquarters at Indianapolis, died at his home in that city, November 14.

L. L. Kelly, bridge engineer of the Norfolk & Western at Roanoke, died unexpectedly October 29, aged 47.

William Smith, Jr., assistant general freight agent on the Illinois Central at St. Louis, died in that city, November 13.

Arthur T. Allen, coal freight agent of the Chicago & Eastern Illinois at Chicago, died in that city, November 17.

E. O. Thedens, master car builder of the Chicago & Illinois Midland with headquarters at Taylorville, Ill., died at St. John's Hospital in Springfield, Ill., November 9.

Joseph A. Kemp, former president of several short lines that made up the Wichita Falls Route with headquarters at Wichita Falls, Tex., died at Austin, Tex., November 16, aged 69.

Supply Trade Notes

The Okonite Company announces the appointment of **J. E. Harrall** as sales representative to the light and power industry in the district of Philadelphia. Mr. Harrall is an electrical engineer with a degree from Clemson (South Carolina) A. & M. College. In 1903 he served on the engineering staff of the United Railways & Electric Company of Baltimore, and subsequently with the George Construction Co. as vice president. In 1924 he joined the U. G. I. Contracting Company of Philadelphia as assistant sales manager, and from this connection became associated with the United Engineers & Contractors, Inc., Philadelphia. He was then for one year, to July, 1930, district sales manager of the **Safety Cable Company** division of the **General Cable Corpn.** with headquarters at Philadelphia.

William H. Woodin, chairman of the **American Locomotive Co.,** announces that the company has formed **Alco Products, Inc.,** a subsidiary, which will carry on a business of engineering, designing and construction of process

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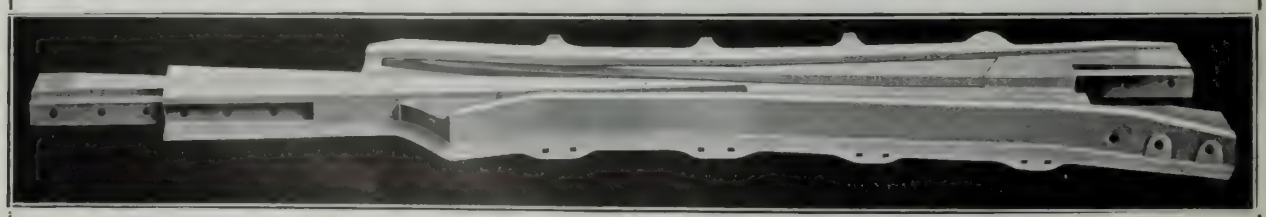

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plants and equipment for the oil refinery industry. Alco Products, Inc., will absorb and carry on the business of **Heat Transfer Products, Inc.,** which was acquired by the American Locomotive Co. last year.

The Centrifux Corporation, Cleveland, announces the appointment of **John F. Nulty** as eastern railway sales representative with headquarters in Philadelphia. Before joining the Centrifux Corporation, Mr. Nulty was for many years associated with the **Baldwin Locomotive Works,** in charge of the accounting and estimating departments.

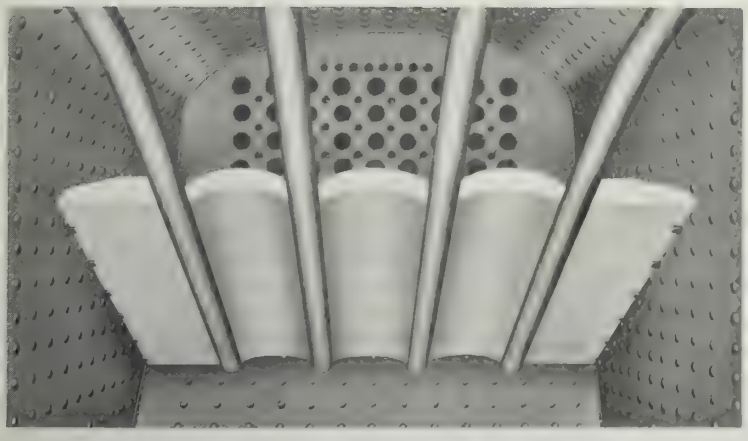
The Carrier Engineering Corpn., Newark, N. J., the **Brunswick-Kroeschell Co.,** New Brunswick, N. J., and Chicago, and the **York Heating & Ventilating Corpn.,** Philadelphia, manufacturers of air conditioning, refrigerating and unit heating and ventilating equipment, have been consolidated. Including subsidiary and affiliated concerns, the merger unites 15 companies with total assets of about $15,000,000. The organization is equipped to provide any kind of atmospheric conditions in homes, office buildings, and industrial plants. Each of the companies is to retain its separate entity under a holding company to be known as the **Carrier Corporation.**. All research, direct sales and engineering activities will be conducted through this corporation.

John F. Nulty

S. L. Poorman, representative in New England of the **Westinghouse Air Brake Co.,** has changed his headquarters from Boston to New York; **C. O. DeWitt** has been transferred from the engineering department in Wilmerding to the New York office as assistant to the district engineer; **John W. Henry,** mechanical expert at Washington, D. C., has been transferred to the eastern district with headquarters at New York; **T. W. Baldwin** has re-entered the employ of the company as mechanical expert at St. Paul; **D. R. Collins,** formerly a locomotive engineman on the **Denver & Salt Lake** has been appointed mechanical expert with headquarters at Denver.

Clyde C. Elmes, formerly superintendent of the **Baldwin Locomotive Works** has been elected vice president and general manager of the **Dallett Company,** Philadelphia, manufacturers of pneumatic tools, electrical equipment and machinery.

Dr. Victor O. Homerberg has been appointed technical director of the **Nitralloy Corporation,** New York. Through assignment by Aubert & Duval, Freres, Paris, this company controls the United States patents issued to Dr. Adolph Fry of the Friedrich Krupp Corpn., Essen, Germany, and several other patents and applications relating to steels destined for nitriding. Dr. Homerberg is associate professor of physical metallurgy at the Massachusetts Institute of Technology. He has been consulting metallurgist for a number of manufacturing concerns and engaged in research pertaining to the nitriding process. He is chairman of the publications committee and of the sub-committee on nitriding



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of the American Society for Steel Treating.

G. S. Turner, president of the **T-Z Railway Equipment Co.,** Chicago, has been elected president also of the **Morris B. Brewster Co.,** which has moved its offices to 14 East Jackson boulevard, Chicago.

E. J. Blake, formerly associated with the **American Brown Boveri Corpn.,** Camden, N. J., as engineer in charge of the car lighting section, has resigned to engage in private consulting engineering work with offices at 123 South Broad street, Philadelphia. Mr. Blake is the inventor of a number of railway signals, automatic train control and car lighting devices.

C. A. Wilmot, representative of the **Wickwire & Spencer Steel Co.,** with headquarters in New York, has been appointed assistant sales manager in charge of structural products, with headquarters at Chicago.

J. L. Lynch, chief estimator in the Cleveland district of the **Austin Company,** has been appointed manager of the Ontario district of the new Canadian branch, with headquarters in Toronto.

Edward J. Fagan, representative of the **Midway Railway Equipment Co.,** Chicago, has been elected president, succeeding **Eugene Weiss, Jr.,** resigned.

John T. Brennan, assistant vice president in charge of sales of the **Greenville Steel Car Co.,** Greenville, Pa., has been elected vice president in charge of sales, succeeding **Kenneth C. Gardner,** resigned.

The Universal Draft Gear Attachment Co. has appointed **A. E. Biddle,** executive vice president with headquarters at Chicago.

Presly N. Guthrie, Jr., vice president in charge of sales of the **Reading Iron Company** has been elected president succeeding Leon E. Thomas, who resigned last July.

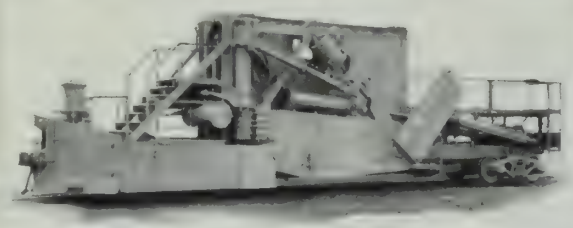
We Beg to State

Being an engineer, it is scarcely probable that President Hoover should be credited with the move to simplify government letters. But engineers, lamentably poor letter writers, are not by any means the only professional men who have this weakness. Taken the year round, one receives few well written letters from anyone in any business. Most of the ordinary courtesies of life are forgotten by the average man when he dictates a letter or writes with a pen. A stiff formal attitude is assumed. He talks, on paper, as he never would think of talking to a man's face. In government letters the same old stilted forms have been used since the nation was founded.

Some one in Washington has decreed that formal letters addressed to others than the President, Vice-President and governors of states are hereafter to be subscribed "very truly yours," instead of the traditional "I have the honor to be, Sir, etc." Moreover in the body of the letter the expression, "I have the honor" must be omitted. And in informal letters, except to the officials mentioned and to members of the diplomatic corps the subscription, "I am, my dear Mr. ——," must be dropped in favor of "sincerely yours." Dispatches from the field to the department of state must hereafter dispense with "I have the honor to be, Sir, etc.," and be subscribed "Respectfully yours."

In addition to the foregoing sensible instructions why not, in the railroad business, do away with these hateful examples?

"I have for reply yours of ——"
"You are referred to yours of ——"
"With reference to yours of —— beg leave to state that same has been attended to as per your request."



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